The Iron Age

A Review of the Hardware and Metal Trades.

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The Architectural Utility of Iron.

Iron as a Constructive Material—Its Advantages, &c,

The place now occupied by iron in the field of architecture is to a very great extent a new one. It is also extending its usefulness with rapid strides, and every month in its constant development providing for itself new uses or adapting itself with greater facility to old ones. The architectural phase of iron is thus always changing, and an article covering the entire ground at the present time would fall far short a year hence of an adequate presentation of the subject. But little effort, however, has been made to give a proper consideration to the topic, and while there exist numerous scattered fragments upon the subject, comprehensive discussions of the use of iron in architecture are as yet very rare. Much that is valuable in a technical way has been written upon the strength of iron beams and girders, but this kind of literature, indispensable, perhaps, to experts and builders, is uninteresting to and will not be read by others. Cursory views of the subject have also been written, but generally contain little that the ordinary reader does not already know. It is impossible within the limits of an article such as this to give a proper scope to the topic, and while we propose to consider the subject as carefully as the sources of information at our disposal will permit, yet we do not hope to say everything that can be said upon a subject which yet to a great extent remains unwritten.

The universality of the adoption of iron as a building material at the present time, and the rapid growth of the business with which it has attained its present importance, are alike matters of remarkable interest. Seventeen years ago, not more than one iron front was put up during a year, and now they are erected every week. Churches, banks and other public buildings are constructed in sections and sent away to Central America, South America, Utah, and, indeed, it matters not how great the distance, wherever they may be desired. Grain warehouses, arsenals, ferry houses, elevators and factories are but a few of the more important structures into which iron enters at the present time as the principal element.

As an example of an unique iron structure, we publish this week an illustration of the floating iron lighthouse at the entrance of the port of Liverpool, over certain rocks where, owing to the action of the currents, it was found impossible to build an ordinary lighthouse. It rests on a large iron bulb which is always below the surface of the water, and anchored to the bottom. The bulb is furnished at its upper portion with a large circular plate, which secures the stability of the entire structure. The situation of the keeper must be romantic indeed.

Iron is used not only in the heavier portions, but in every part of a structure. In many edifices the floors, windows, doors, roof, verandas, cornices, vaults, ventilators, fences and gates, fountains, vases, statuary, chairs, settees, etc., all are of iron. Spiral staircases of a light and enduring character, beautifully ornamented, are constructed of this material, and put up with facility where taste or economy of space calls for such an arrangement. Even for the stable this metal is manufactured into many beautiful forms, furnishing an entire outfit, embracing elegant racks, mangers, troughs, posts, rings, and every device to secure comfort to the beast, and to give the place an air of artistic design.

The minor ornaments executed in iron, which beautify the various portions of a building, show still more forcibly the scope of this use of the material, and the facility with which it may be applied to such purposes demonstrates its adaptability to the æsthetic phase of architecture. From the readiness with which cast iron receives and retains any desired form, it may be made the medium for expressing any of the various styles of architecture. It is equally capable of embodying the simple and severe outlines of the Grecian orders, and the rich and elaborate shapes of Gothic architecture. It will express as readily the traceries and many peculiar forms of the Moorish styles as the more staid and simpler productions of Roman art. Tendrils, sprigs and leaves of flowers surprisingly perfect are cast from this metal, beautiful medallions are formed and used in ornamentation, and, indeed, there is no end to the enumeration of the many and varied artistic applications of iron. And these forms of art are not confined to one locality, but the foundries and workshops in which they are elaborated are scattered throughout the United States, employing in many cases designers of superior merit.

THE ADVANTAGES OF IRON AS A CONSTRUCTIVE MATERIAL

are many and decided. It should never be claimed for iron that it can always replace brick and stone, but it has nevertheless a sufficient number of advantageous features to commend it to those who desire to avail themselves of these peculiar qualities of iron. Its prominent advantage is the great strength which it affords with the least amount of material. Its strength in bearing weights, for instance, is ten or eleven times as great as the harder granites or marbles, twenty times as great as white oak, forty times as great as freestone, and nearly two hundred times as great as ordinary brick work. A column of cast iron would have to be ten miles high to crush itself by its own weight. These figures, of course, must all be regarded as approximate, for as the quality of iron varies, a very wide difference may be observed in its strength. For our present purpose, however, they furnish a very good average. The endurance of iron is well illustrated in the Coalbrookdale bridge, in England, which crosses the Severn, and although erected about one hundred years ago, is at present standing, and in an excellent condition. The strength of iron also fits it well for distribution in slender pillars and thin sheets which give to iron construction its light attractive appearance so strikingly in contrast with the heavy forms of stone work.

Economy of wall space, which increases the number of windows and the quantity of light admitted to a building, is also a very important advantage in iron construction. In buildings such as are generally found in cities, whose only windows are in the front and rear of the structure, this consideration is of much consequence, especially from a sanitary standpoint.

The lightness of the structure, while it secures this advantage, also calls for less outlay in the cost of the foundation. In addition to this, whenever it is necessary to remove an establishment from one spot to another, a further essential advantage is made evident in the facility with which iron structures may be transported. The building in the first instance may have been shipped a long distance, the various pieces, none of which usually weigh over a ton, having been accurately fitted and then taken apart and boxed for transportation. Arriving at their destination they are riveted and fixed in their places, and the building stands. If it is afterward necessary to remove the structure it can be taken to pieces again and put up in another place in the same manner in which it was originally shipped and erected. This certainly could not be done with stone. And even if the building has been damaged by fire, the component pieces are nevertheless not destroyed, and may be cast or wrought again, whereby their usefulness may be almost entirely preserved.

If the structure has been injured by the weather, it may be repainted and its original beauty perfectly reproduced. This advantage also preserves the iron from the effect of rapid oxidation, and gives to the metal a constant renewal of its existence. The advantage of iron in this respect may easily be seen where a building constructed of metal happens to stand adjacent to one of marble. The latter gradually becomes discolored by the weather, and the former, if properly painted, periodically reappears with renewed freshness.

The imperviousness of iron to moisture is an exceedingly valuable quality whenever substances that are liable to decay are stored within such a building.

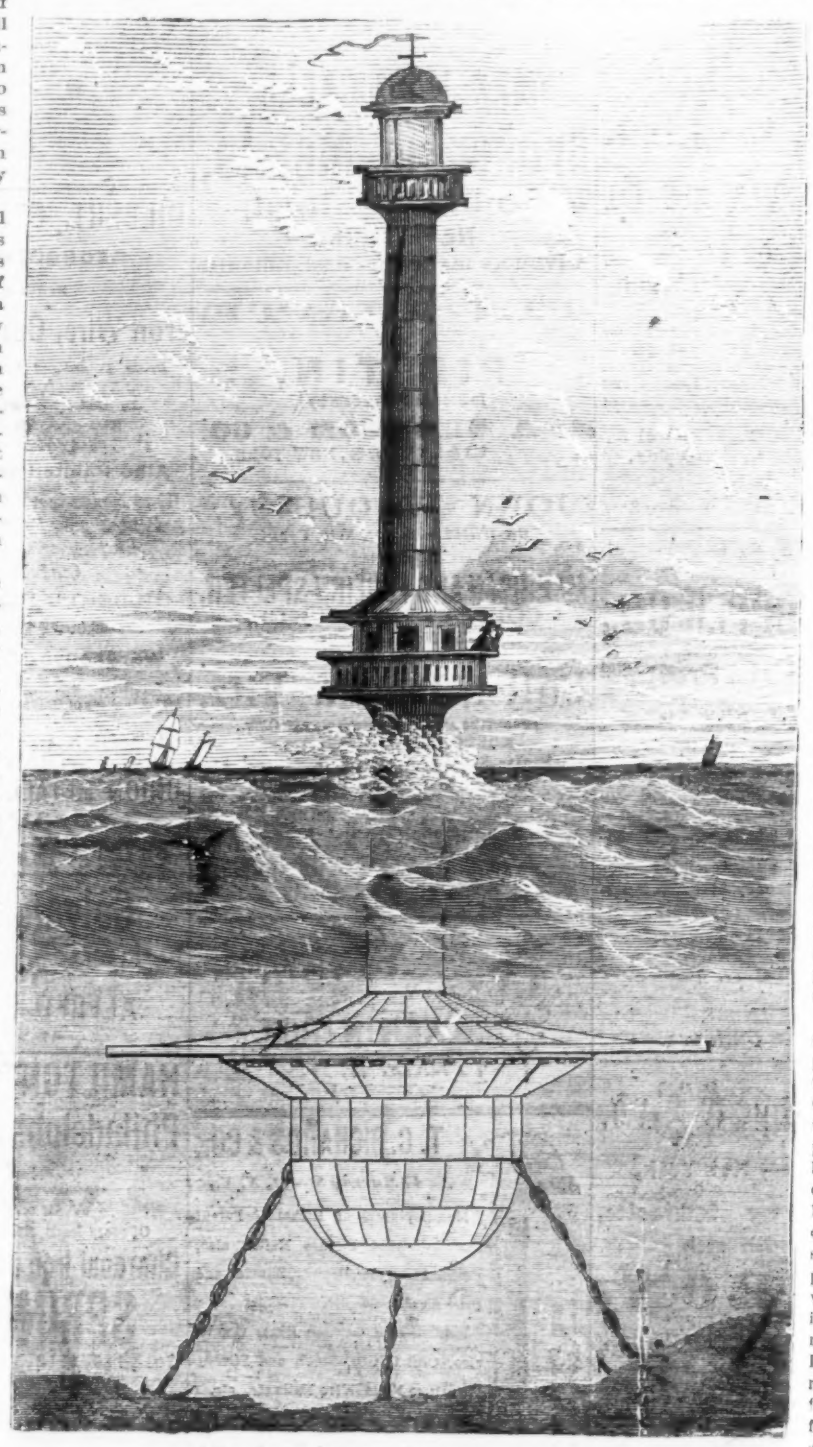
But among the most important of the qualities of iron is its incombustibility. Iron will melt and burn under certain circumstances, but where the proper precautions have been taken in the arrangement of the iron portions of a building, and it is not exposed to extraordinary conditions of heat, it is practically unaffected by fire. This point, however, will receive ample discussion, and for the present we notice simply the fact.

The most important, however, of the qualities of iron as regards its constructive adaptations, is its

FACILITY FOR THE EMBODIMENT OF ARCHITECTURAL DESIGN

As we have before briefly stated, there is no form of wood or stone ornament which may not be imitated in iron, while there are many shapes in which the latter can be cast economically, that are impossible or exceedingly expensive with the former. And in addition to this capability of assuming such a variety of forms, iron, by reason of the closeness of its texture, can be made to receive an exquisite and enduring finish and sharpness of outline. The combinations which may be effected also when wrought and cast iron are used conjointly are all but innumerable, and give to it the power of expressing almost any conceivable design. This feature, indeed, has been carried to excess by many architects, who have covered their buildings with a heterogeneous mass of ornament, thereby grossly offending good taste. Much discussion has arisen regarding the propriety of imitating in metal the forms usually embodied in other materials. Others have questioned the good taste of imitating natural objects in iron. Others have objected to all but the simpler forms of ornament. Good taste will probably consist in avoiding extremes in any direction. To cover a handsome edifice with insignificant ornaments would be an offence to good taste, but a proper amount of delicate adornment could only produce a good effect. The origin of this objection may be traced to the incorrect idea that iron, so susceptible of ornament, should therefore be ornamented extravagantly.

In our next and subsequent issues we will present some interesting facts relating to the history of iron architecture, the prominent buildings of the present, the methods of construction followed, fire-proofing, etc.



FLOATING IRON LIGHTHOUSE NEAR LIVERPOOL, ENG.

Improved Foundry Derrick.

It has always been thought necessary that a foundry should be spread over a large space. Such an establishment includes sheds for iron, sand, coal, a boiler house, and possibly a machine shop and engine room, all distinct from each other, and separated by some little space, while heaps of old metal, piles of sand, and accumulations of rubbish occupy still more room. The raw material, as it comes in, is generally put where it will be least in the way, or where it can be most readily unloaded without much reference to future wants or convenience. For these reasons, room is always considered desirable about a foundry. This is, doubtless, a waste, because if less room is used the expense of handling afterward is reduced to a minimum. When iron is unloaded at the works, it should be placed upon the spot from which it can be broken up and at once hoisted to the cupola. Coal should be equally near, and so should sand, flour for cores, and all the other supplies. The next point to be observed is that each process should have the materials, whatever they may be, in such a situation as to be ready for the next operation without having to be removed or carted about. For instance, when a casting is finished and cleaned, ready for the machine shop, it ought not to be at that end of the foundry furthest from the machine shop, but rather the reverse. Each step in the manufacture should advance it not only toward completion, but toward its destination.

To those who are skeptical upon the points named, a visit to the Moore Steel Elastic Car Wheel Co.'s Works will be the strongest possible proof. The land occupied by the company is 100 feet by 125 feet, which includes all space for storage of coal, wood, patterns and iron, as well as all their buildings, foundry office and machine shop included. In the old molding room, which was 10 feet wider and a few feet shorter, they were able to place 53 wheels per day, using the ordinary cranes. In the present molding room, which is 40 feet by 120, they comfortably make 150 wheels per day. This quite remarkable result is accomplished by using a kind of elevating car, or carrier on elevated tracks which command the whole floor of the shop, making it all available for molds, excepting only passage-ways between the lines of molds of about six feet in width—just wide enough for men to work comfortably.

Suspended from the roof timbers by 1¼ inch iron rods are four pairs of timbers or stringers, 4x8 inches, edge up. Upon these stringers are laid lines of 22 pound rails, thus forming four pairs of railway tracks, running the whole length of the shop. The space between the rails is unobstructed, the stringers being held by bracing between the different lines. On each of these overhead tracks is a four-wheeled truck or carrier, and on its frame is a drum and a hoisting chain wound upon it. A grooved wheel with a worm wheel upon its axle serves to turn the drum and wind up or unwind the hoisting chain. It is itself moved by an endless chain, which is long enough to come to a convenient position for workmen to use. The parts are proportioned so that the truck can take a load of even two tons with ease—400 pounds being the common weight lifted.

Beneath these tracks are other tracks of 20 inch gauge, 18 pound rails. The latter are made true, for the molds to rest upon.

A floor of iron plates runs from the cupolas out across the foundry. The large ladle is filled from the cupolas, and then the small wheeled ladles are filled from it, and run out under the proper trucks, which lift and carry them to the molds in less time than it takes to describe the operation. No sooner is the one empty, than another is ready to take its place. The iron is transferred from furnace to the mold with, as nearly as possible, a minimum amount of labor.

Though the tracks and loads are supported from the roof no extra strength is required in it, provided it is built of slate or a gravel covering. The whole floor being available for casting, diminishes very materially, as has been shown, the size of the building necessary for producing a given amount of work. The trucks themselves cost $200, which is somewhat more than a crate of ordinary capacity would cost. When this plan is compared with the over head traveling derrick, its advantages are just as marked, if not more so. The derrick can handle but one ladle at a time, while by this method at least four may be pouring at the same time on the floor. On the point of cost, this system would be far ahead, as the framing for the tracks is comparatively inexpensive, both in the items of material and of labor.

Mr. Washburn, of Worcester, is now building a large car wheel foundry in Hartford, Conn., where the floor will be fitted up in the manner described, Mr. Moore having just completed and shipped the trucks to him. Among other works fitted up in this style, may be mentioned those of the Michigan Car Co., of Detroit, and those of Davenport & Fairburn, at Erie, Pa.

The Gold Product and our Foreign Trade.

The *Journal of Commerce* says: After a careful consideration of the most reliable returns, we conclude that the yield of gold is about $55,000,000 and of silver about $17,000,000, making $72,000,000 as the annual product of the United States. The total annual yield of the world is about $210,000,000. The following will show the imports and exports of the precious metals at all the ports of the United States for each of the last two fiscal years, ending June 30:

IMPORTS OF SPECIE AND BULLION FROM FOREIGN PORTS.

1871	$21,960,024
1872	13,743,886

EXPORTS OF SPECIE AND BULLION TO FOREIGN PORTS.

1871	$98,543,885
1872	79,877,531

It will doubtless interest many of our readers to study in the same connection the total foreign import and export movement of the country for the same periods, and we have carefully compiled them from the official record:

IMPORTS OF THE UNITED STATES FROM FOREIGN PORTS.

Year ending June 30.	1871.	1872.
Dutiable goods	$483,635,307	$570,326,614
Free merchandise	235,957,737	47,267,408
Specie and bullion	21,960,024	13,743,886
Total imports	$541,493,708	$640,337,510

EXPORTS FROM THE UNITED STATES TO FOREIGN PORTS.

Year ending June 30.	1871.	1872.
Domestic produce and merchandise	$478,013,395	$476,421,478
Foreign produce and merchandise	14,421,270	15,690,455
Specie and bullion	98,543,885	79,877,531
Total mixed values	$590,978,550	$571,989,467
Reduced to gold value	$541,504,174	$523,823,620

We have reduced the mixed values of the export returns to gold value by deducting the rate of gold premium for the shipments stated in currency. We may correct an erroneous impression regarding this movement by calling attention to the fact that the latest returns from the Statistical Bureau at Washington contain an error (typographical, we suppose,) of one hundred million dollars. Comparative tables, which include this error, are now going the rounds of the press.

Our readers will not fail to be struck with the comparative totals for the last two years. In 1871 the imports and exports were each a fraction over five hundred and forty-one million balancing almost to a dollar. In 1872 the exports dropped to five hundred and twenty-three millions, while the imports ran up to six hundred and forty millions, showing a difference of one hundred and sixteen and a half million dollars. These figures will be found valuable for constant reference, and should be carefully preserved.

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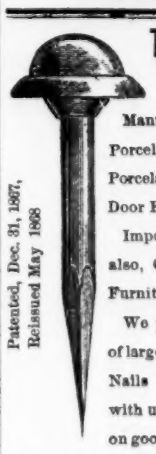

Patented, Dec. 31, 1867, Reissued May 1868

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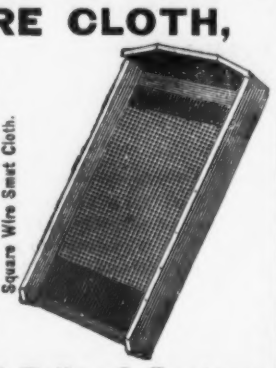

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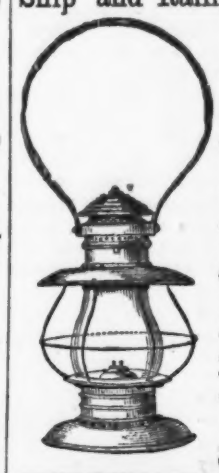

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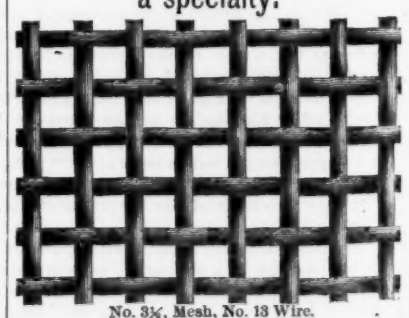

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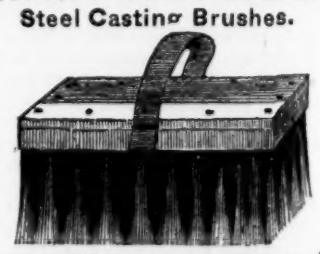

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Whitlock's Spool Lifter.

Many persons do not fully appreciate the fact that a belt which is capable of imparting comparatively little constant power, may be made to transmit that power to a balance wheel, which, after storing it up until it moves at a given speed, may be made to exert a great power for a short time. Here speed is an index of power, and for each time that we double it we quadruple the power. This principle is especially valuable in rolling mills, punching presses, and in raising weights, where the power is used at irregular intervals, and where a much more powerful motor would be required if no accumulated power were employed.

On this principle is based the invention of Whitlock's Lifter, for raising drop and trip hammers, rock drills, pile-drivers, elevators, and weights not requiring regular power. Our illustration represents one of these machines, with the hammer in the act of falling. The pulley, N, fastened to the shaft, D, runs in the bearings, F, F, which rock on the stationary shaft, G, thus allowing the shaft, D, to be thrown forward or back by the rubber springs, H, H, or lever, K, K', which is attached to the treadle, V. On the shaft, D, are the balance wheels, M, M, and a V-grooved pinion, J. Parallel to the shaft is another shaft, to which is fastened the V-grooved wheel, A, which meshes into the V-pinion, J. On this last-named shaft is a loose spool, B, on which is wound the strap, W, raising the hammer. This spool, B, is caused to revolve by the moveable part of the clutch, E, which is fastened to the shaft by a feather and is thrown forward and back by the lever, S, to which is attached the cross-head, L, by a pipe through which passes a round bar, O, adjustable to any desired hight by means of a friction collar in the cross-head, L, which is not seen in the illustration. This cross-head is so constructed as to fit any drop. Underneath this cross head is a catch, P, supporting it, which is kept in place by the spring, Z, and which is connected with the lever, T, by a rod.

We will now attempt to describe its operation. Suppose the balance wheels, M, M, to be running at the rate of five hundred revolutions per minute, thus indicating a given amount of power which we will, for illustration, suppose to be sufficient to raise the hammer five times. Therefore, it will be seen that we only require constant power enough to keep the balance-wheels, M, M, up to their regular speed, this amount depending upon the work to be done.

The belt is not depended upon to raise the hammer, and need be only wide enough to supply the aggregate amount of power consumed, but as it does not draw when the balance-wheels are running up to speed, the extra amount of belt does not increase the draft on the moving pulley, and at the same time supplies more power when required. The treadle, V, being latched down, throws the V-grooved pinion, J, and the V-grooved lifting-wheel, A, into contact, and the machine is ready for use. The hammer hanging on the catch, Y, being released by the treadle, U, strikes the anvil and crowds back the circular part of the lever, T, thereby withdrawing the catch, P, from under the cross-head, L, which falls and clutches the spool, B, causing the lifting-strap, W, to be wound up in time to catch the hammer on the rebound, and moves up, striking the rod, O, and unclutching the spool, B, when the lifting strap, W, is unwound by the weight, X, which is attached to the spool, C, thus allowing the hammer to fall perfectly free.

For setting dies or where light blows are required, the treadle, V, is unlatched and worked with the foot, when the weight may be raised or lowered as perfectly as a steam hammer, the amount of friction between the V-grooved wheels A and J determining the speed and direction in which the hammer moves. When the machine is not at work the V-grooved wheels, A and J, are thrown out of contact by the rubber springs H, H, so that no power is required except that consumed in running the balance wheels M, M, and driving shaft D.

In establishments where large hammers are used, and only a small constant power can be spared, this lifter, it is believed, will meet a demand supplied by no other. It may be applied to drops already in use, without change of dies or especial inconvenience, as its connections are made adjustable to all styles of drop-presses. It is built by the Chapin Machine Company, of New Hartford, Conn., who also manufacture bolt machinery, cotton-pickers, &c. This company seem to be satisfied of its merits, as they sell it with the strongest possible guarantees. For lifting rock-drills, pile-drivers, &c., we see no reason why it should not come fully up to the claims made for it. Mr. Whitlock has also patented a short-stroke cam-lifter, which he is about ready to introduce, and which, for forging, is claimed to work as fast as a common tilt-hammer, and to catch the rebound perfectly. An illustration of this machine will soon appear in *The Iron Age*.

New Patents.

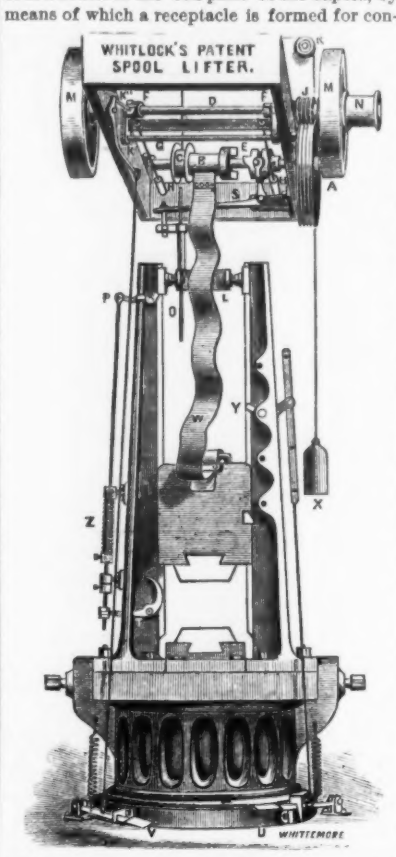
We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN FURNACES FOR REMELTING IRON AND OTHER METALS.

Specification forming part of Letters Patent No. 132,667, dated October 29, 1872, issued to William J. Keep, of Troy, New York.

This invention relates to certain new and useful improvements in the method of and furnaces for remelting iron Figure 1 is a vertical central section of apparatus upon a line extending from front to rear through cupola, hot-blast oven, and blast-pipe; Fig. 2 is a horizontal section of the same on line $x\ x$ of Fig. 1; Fig. 3 is a vertical section on line $x'\ x'$ of Figs. 1 and 2.

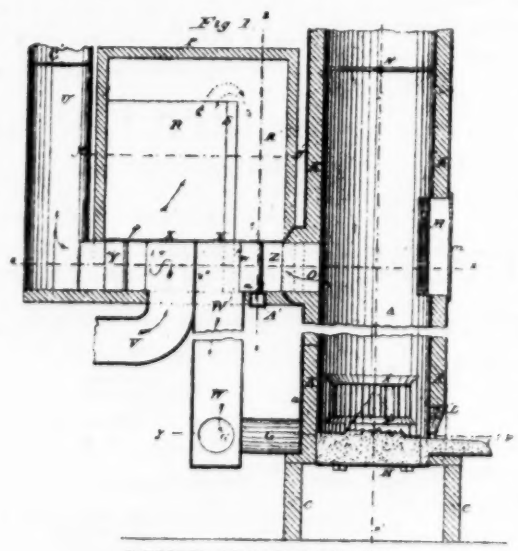
The object of this invention is to remedy certain defects heretofore existing in the method and apparatus employed for remelting iron so as to enable the operation to be performed with greater economy and rapidity; to which end it consists, principally, in the method employed, substantially as specified. It consists, further, in a cupola or remelting furnace, constructed with two or more cylinders, one of which is for containing the metal to be operated upon, and the others the fuel for combustion when the same are so arranged as that said metal and fuel shall descend by the force of gravity as rapidly as the former melts and the latter consumes, so as to keep up a constant supply of said articles at the melting point. In constructing the lower end of the fuel magazine of or from bars so arranged as to form a grate upon which the fuel burns and through which the ashes and scoria fall; in the peculiar construction of the bed-plate of the cupola, by means of which a receptacle is formed for containing molten metal, and ashes are prevented from falling into the same; in the peculiar construction of said bed-plate, whereby the heat of or from the fuel is concentrated and caused to reach all of the metal; in contracting the whole or a part of the cupola immediately above the blast-openings so as to concentrate the heat and also prevent the molten iron from dropping into the fuel; in the peculiar construction of the hot-blast oven; in the peculiar construction and arrangement of the inlet and outlet passages of said oven and the means employed for controlling the same; in the means employed for supplying oxygen to the heated escaping gases for the purpose of perfecting the combustion of the same; in the means employed for changing the course of the escaping gases from the upper end of the cupola to the hot-blast ovens or chambers: in a cupola provided with a removable portion for the purpose of affording access to the interior of the same.



In the annexed drawing, A represents a chamber for containing iron, and B and B two fuel chambers, arranged, preferably, upon opposite sides of the same, said parts being placed in a vertical position and having any desired shape or area in horizontal section. The central chamber A rests upon and is supported by means of suitable foundation walls, C, while the fuel chambers or magazines B rest upon a casing or housing, D, which has, preferably, a rectangular shape and incloses the lower ends of said parts, as shown in Figs. 1 and 3. The magazines B have impervious walls to or just below the upper end of the housing D, from whence downward, to or near the lower end of the cupola, the inner side of each is removed and its outer side composed of grate bars E, that incline inward and downward toward said cupola, the walls of which are removed so as to form openings F, that connect the lower end of the same with said magazines. The grates E are preferably made adjustable toward or from the cupola so as to vary at will the horizontal thickness of the fuel contained between the same, and enable anthracite or bituminous coal to be burned, either as lumps or powdered. The housing D is provided with two or more openings, d, upon opposite sides, for the purpose of stoking the fire, removing ashes, &c., which openings are tightly inclosed by means of corresponding doors d', while a supply of air for the purposes of combustion, is admitted through suitable openings G constructed in and through the rear side of said housing. The lower end of the cupola is enclosed in the usual manner by hinged doors H, which are covered by sand or fire-clay, said covering being extended upward at the center in the form of a cone, I, to a point near the upper edges of the openings F for the purpose of contracting the hearth, concentrating the force and heat of the blast, and giving to the latter an upward inclination. The interior of the walls of the cupola are lined with fire-brick K, which, from a point just above the openings F, extend inward and downward so as to form boshes k, that contract the internal diameter of the cupola at that point so as to compel the melted iron to drop inside the line of said wall and prevent it from passing outward into the magazines. Another effect of the boshes is to concentrate the heat and increase the force of the blast. Below the boshes the lining K extends upward to a point about one-fourth the distance from the lower to the upper side of the openings F, so as to form adam k', which prevents the molten iron from passing into the magazines. Said openings F may have any desired size, but it is better to extend them laterally than vertically so as to keep the melting point low down. The tymp or breast L is constructed as usual of sand or clay, as is also the spout l. An opening, M, is provided in and through the wall of the cupola for the purpose of charging the same, and when not in use is tightly inclosed by means of a door, m. Upon the rear side and near the lower end of the cupola a portion, a, of its wall is made removable for the purpose of affording access to its interior when necessary to effect repairs.

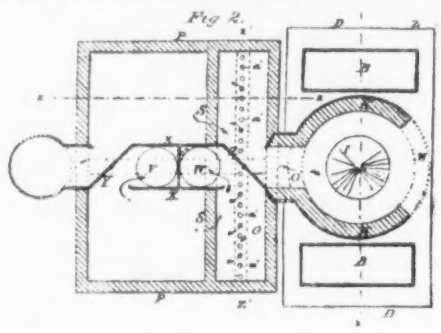
In order that the usual loss occasioned by the escape of heated and combustible gas may be avoided, a valve, N, is fitted to the upper end of the cupola so as to enable the same to be closed, and an opening, O, provided in and through the rear wall of the same, through which said heated gases may pass into an oven for heating the blast, which oven is constructed upon the regeneration principle, as described below.

The oven consists of a rectangular casing, P, which extends upward from the lower side of the opening O, and is divided by means of a central partition, extending from front to rear, into two compartments, R, which latter are sub-divided by a cross partition, S, so as to form at the front side of the oven two smaller compartments, R', that communicate at their upper ends over said cross partition with said rear compartments R. The rear compartments R are filled with loosely piled fire brick, from a point upon a line with the upper edge of the opening O to or near the upper edge of the partition S, and are connected at their lower ends and rear sides with the exit flue U, while the front chambers R' are unobstructed, and are connected at their lower ends and front sides to or with the interior of the cupola, so as to cause the heated escaping gases to pass upward through said chambers R' into the chambers R, and downward through the latter into said exit flue, said gases having, during such passage, imparted to the brick, and the lining of the oven a large percentage of their temperature. The cold air pipe V and blast or hot air pipe W enter the lower side of the oven at its transverse center, and open into a housing, X, which is divided by means of a cross partition, x'', into two compartments, v and w, which open, respectively, to the rear and to the front. Two butterfly valves, Y and Z, are pivoted vertically within the spaces left between the ends of the housing and the contiguous walls of the oven, in such a manner that when placed diagonally in either direction each valve shall extend between one wall of said housing and the opposite side of the opening O or U to or from said oven, and cut off communication between one of the compartments R or R' and said openings. By connecting the valves together, so as to cause them to be moved simultaneously, the current of heated escaping gas can be instantly changed from one set of compartments to the opposite set, while, as seen in Fig. 2, the course of the current of cold air will also be changed by the same manipulation.



As thus arranged, it will be seen tha while the heated gases are passing through and heating the compartments upon one side of the oven, the air blast enters the opposite heated side through the pipe V, passes upward, through the rear chamber R, into and downward through the front chamber R', and from thence into the hot air pipe W, and through the same into the cupola, said air having during such passage abstracted from the lining and loose brick of the compartments so large a percentage of their heat as to raise its temperature to about 1400° Fahrenheit. After the temperature of one set of compartments has become too low, and that of the opposite set has been raised to a high point, the position of the valves is reversed and the cooled chambers reheated, while the heated chambers are being cooled by the air blast.

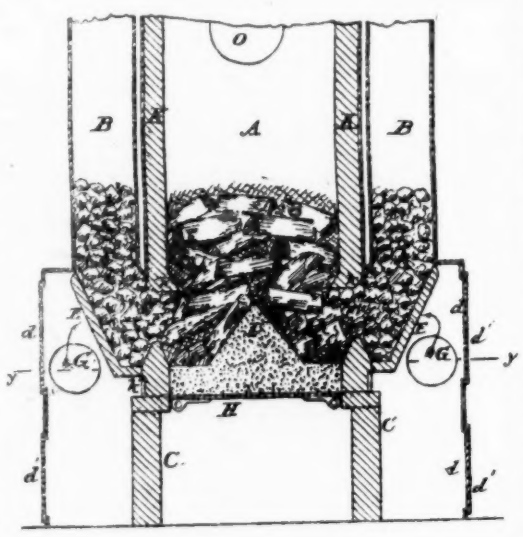
In order that the combustible gases thrown off from the cupola may be consumed and their heat utilized within the oven, an air-duct, A', is formed upon the lower side of the casing, P, immediately beneath the transverse center of the chambers, R', with which chambers communication is effected by means of a series of small openings, a, that are formed in and through the bottom of said casing. As thus arranged, the pressure of the blast forces air downward,



through the openings upon one side of the valve, Z, into the duct, A', from whence it passes upward into the chamber, R', upon the opposite side of said valve, where, meeting the escaping gases, said air is thoroughly intermingled therewith, and supplies the requisite oxygen to cause said gases to burn with an intense heat.

As it is desirable that a full stream of air should leave each of the openings, a', a slide is placed within, and bears against the upper side of the duct, A', and is provided with two series of openings, the first of which corresponds in diameter to, or with, the openings, a', while the second series are somewhat smaller than the same. The relative positions of the

Fig 3.



openings are such that by so arranging the slide as to cause the large openings in use to always be upon the air blast side of the oven, it will be seen that air will be freely admitted to the duct, A', while, as the small openings in use are upon the opposite side of said oven, the escaping air will be concentrated, its velocity increased, and a full stream insured for each opening. A valve, or damper, C', placed within the exit flue, U, enables the same to be sufficiently closed to insure any degree of pressure within the cupola and oven less than the pressure of the blast, by which means the latent heat of the expanding air becomes apparent, and is caused to remain.

In "taking off a heat" the operation is as follows: The cupola is filled with iron and the magazine with fuel, and the latter ignited at the grates. The air blast is now started, and, passing through the grates into the cupola, carries with it the flame and heat from the burning fuel, which soon raises the temperature of the iron to the melting point. As the iron at the lower end of the cupola melts, that from above settles down and takes its place, while the heat not used for melting the meta below passes upward, and is partially absorbed by the metal above, the remaining heat passing into the oven with the gas. As the fuel burns away, that from above settles down and in turn is consumed, so that the supply of heat is rendered constant. The more rapidly air is forced into the cupola the greater will be the heat generated and the more rapid the melting. If too rapid melting takes place, the force of the blast can be reduced, or said blast stopped without causing damage. The cupola may be allowed to cool down and again started when iron is next required. If slag forms in the cupola, it may either be drawn off through the iron tap-hole, or through a separate opening. Should an oxidizing flame be formed, the grates must be moved further from the cupola, so as to increase the thickness of the column of coal, and correspondingly increase the consumption of the same. If desired, the coal may be permitted to touch, or partially mix with, the iron at the bottom of the cupola; but it is thought best to keep them separate.

Claim 1. The above described method of melting iron.

2. In a remelting furnace, two or more cylinders for containing, separately, the metals to be operated upon and the fuel for combustion, when the same are so arranged that the metal and fuel shall descend by the force of gravity as rapidly as the former melts and the latter consumes, so as to keep up a constant supply of articles at the melting point.

3. In a remelting furnace in which separate cylinders are employed for containing the metal and fuel, a fuel magazine having its lower end formed of or from grate bars.

4. The peculiar construction of the bed plate of the cupola, A, by means of which a receptacle is formed for the reception of molten metal, and ashes are prevented from falling into the same.

5. The peculiar construction of the bed-plate of the cupola, by means of which the heat from the fuel is concentrated and caused to reach all of the fuel.

6. In a remelting furnace in which the fuel is contained within a magazine separate from the compartment for containing the metal, a cupola having the whole or a part of its interior contracted immediately above the blast openings.

7. The hot blast oven P, in which the compartments R and R' and the valves Y and Z are arranged.

8. The inlet and outlet passages of the hot blast oven O and U, respectively, when arranged as shown, and controlled by means of the valves Y and Z.

9. The air-duct A', provided with the openings a', arranged within or upon the hot blast oven, and combined with the slide B', provided with the series of openings b' and b.

10. In combination with the hot blast oven and cupola, constructed as described, the valve N pivoted to or within the upper end of said cupola, and the valve C' pivoted within the exit flue U.

11. In a remelting furnace, a cupola provided with a removable portion of its wall.

IMPROVEMENT IN THE MANUFACTURE OF IRON, STEEL, &C.

Specification forming part of Letters Patent No. 133,098, dated November 19, 1872, issued to Abraham T. Hay, of Burlington, Iowa.

This invention relates to the means of facilitating the purification of iron, and the manufacture of steel, and the carbonizing of any particular part of a bar or mass of iron, so as to combine iron on the one side and steel on the other; or, in the same piece of metal, to convert one end into steel, the other end being iron.

The inventor says: I have found, first, that if I place in a crucible or closed retort one part by weight of the heavy bright carburet of iron, three parts by weight of the dark high carburet, or, in other proportions, in connection with a small percentage of the oxide of iron and free lime, I produce, by heat, a molten bath or solution below the temperature that wrought-iron fuses, that will convert any piece of iron immersed therein, when at a bright red or white heat, into steel, while any portion of said metal not immersed will remain iron; second, in an open hearth, under a coal fire, these carburet products, when exposed to the blast, intensify the heat and at the same time give to iron heated therein steel properties; third, a molten solution of dark carburet alone imparts to iron immersed therein a coating of new and, apparently, chemically pure white iron permeating its pores, that renders it less liable to oxidize when exposed to the air. I do not limit myself to the proportions set forth; but other proportions may be found, upon experiment, to produce even better results; nor do I limit myself to the use of the particular carburets set forth, as other carburets may be produced that will effect similar results. Fourth, also, when common steel and the dark carburet are brought together, in connection with iron, at a temperature, in a blacksmith's fire, that fuses steel, the iron will take on steel properties.

Claim 1. The within-described method of converting iron, either in whole or in part, into steel.

2. The above described method of producing upon iron a coating of new iron that improves its ductility and malleability, and renders it not liable to oxidize upon exposure to the air, and which coating permeates the structure of that portion to which it is applied.

3. As a non-corrosive metallic coating for steel and other ferruginous products, the above described metallic bath.

From the Phœnixville *Messenger* we take the following item of interest in reference to the Schuylkill Copper Works. At present these works are turning out copper by the Swansea smelting process with satisfactory results. The copper is made exclusively from Pennsylvania ores taken from Jones' mines, on the Wilmington and Reading Railroad, from Cornwall iron ore mines, Lebanon county, and from a mine near Pottstown, Montgomery county. The first cast was made on the 2d inst., which was the first time that copper has been made in marketable quantities from Pennsylvania ores. The present proprietors purchased the copper works on the 2d of October last, and have since then pulled down the old roasing furnace, built a splendid ore furnace, and have run through about fifty-five tons of ore, from which they are now obtaining about 6000 pounds ingot copper. The regular monthly yield at present will be from 12,000 pounds to 15,000 pounds ingot copper. It is the intention of the proprietors to erect another ore furnace next spring, which will enable them to double the present product. The copper made at these works stands A No. 1 in the market, and can be used for any purpose for which copper is required, as wire, bolts, &c. This is an entirely new industry for Pennsylvania; there are no other copper works in the State making copper direct from the ore, the copper works at Pittsburgh being entirely confined to melting the native copper of Lake Superior.

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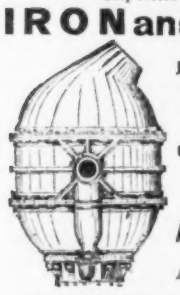

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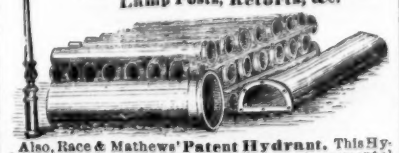

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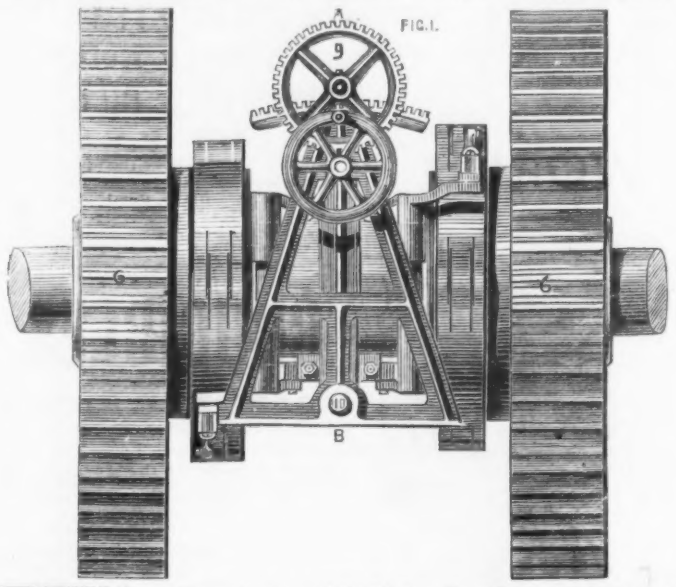
Napier's Reversing Gear for Rolling Mills.

At the last meeting of the British Iron and Steel Institute, Mr. R. D. Napier read a paper describing a very ingenious arrangement of differential friction gear for reversing rolls, the substance of which appeared in these columns. The accompanying illustrations, which we take from *Engineering*, give a very perfect idea of the apparatus and its workings:

Figs. 1 to 4 are different views of the apparatus, and Fig. 5 shows the primary mechanical arrangement which constitutes the foundation of the reversing gearing. It represents what is called a differential friction brake. At first sight it has very much the appearance of a common brake, but in that form of mechanical appliance the movement of the brake lever tightens both ends of the strap at the same time, or tightens only one end and leaves the other stationary; whereas, in the differential brake, when the one end is being tightened the other is

FIG. 1.

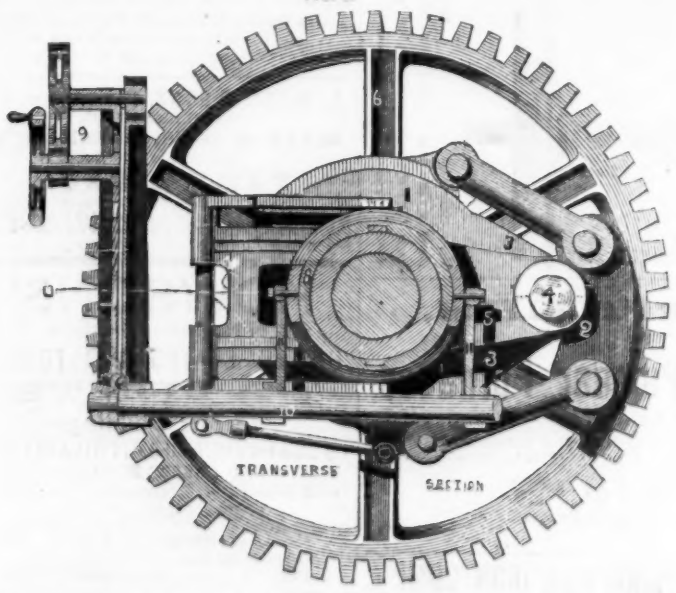


being slackened, but at a different rate, and hence the name given to their appliance by Messrs. Napier Brothers. The effect of this arrangement is that the brake may be made self-holding in one direction for any strain within the limits of its strength, and yet it can easily be slackened. It is not necessary that we should here discuss the *rationale* of its action, but we may remark that Fig. 5 represents a brake which would be self-holding against any strain tending to turn the wheel to the left, that is to say, in the direction of the arrow.

Fig. 6 is an arrangement of differential brake designed for supporting very heavy loads. Between the friction wheel, 1, and the differential lever, 2, a thrust block, 3, is introduced. The fulcrum pinhole in the differential lever is slotted a little on the outer part, and the inner part, 5, of the lever presses upon and turns round in the exterior concave part of the thrust block, which thus bears all the strain toward the center of the wheel that would otherwise be borne by the fulcrum pin in Fig. 5. The principal object of the thrust block is to relieve the fulcrum pin of a great part of its strain; but it has the secondary effect of increasing the power of the brake by about 50 per cent., for all the strain on the thrust block is transmitted to the friction wheel, and is thereby employed in increasing the friction on the wheel, or, which is the same thing, diminishing the strain on the friction strap for a given load.

A differential friction clutch is an arrangement for driving machinery through the intervention of a differential brake, in which the fulcrum of a differential lever becomes the driving or crank pin, and the reversing gear forming

FIG. 2.



the subject of our engraving, and which we shall now describe, consists of a pair of these clutches working in opposite directions.

Fig. 1 is an elevation; Fig. 2 is a section through the line A B, of Fig. 1; Fig. 3 is plan; Fig. 4 is a section through line D (Fig. 2), with outthe friction straps, &c. Similar numbers refer to similar parts in the different figures. 1, 1, are the friction wheels; 2, 2, are the differential levers; 3, 3, are the thrust blocks; 4, 4, the fulcrum pins or crank pins. The cranks, 5, 5, are keyed to the shaft, and the spur wheels, 6, 6, to which the friction wheels are attached, are loose on the shaft, and are driven in opposite directions by any convenient arrangement of wheel work.

The friction straps are alternately made to grip and release their respective friction wheels by means of the bell cranks, 7, 7, which are worked by the sliding ring, 8, and the latter is shafted by the hand-gearing, 9, through the axle, 10, to which are keyed two levers, 11, 11.

When the sliding ring, 8, is in the middle between the two cranks, both brakes are free; and, according as it is moved toward one crank or the other, the corresponding strap is allowed to grip its friction wheel; the wheel then drives the strap, and the strap the crank, by the crank pin.

It might be supposed, and indeed it has been said, that as the brake is self-holding it must make nearly as much shock when put into gear as the common claw clutch. This, perhaps, might be the case but for a principle in the friction of most if not all surfaces, which is often overlooked, and which is in fact not very generally known. It is well known that there is usually a considerable difference between the friction of quiescence, and the friction of motion, but it is not so generally known that when one body sliding on another is brought to a state of rest by friction, the difference referred to does not take place suddenly, that is to say, almost instantaneously, but the friction increases in a rapid rate as the speed decreases. This is a very important fact in reference to the differential gearing for reversing rolling machines; for the clutch may be self-holding only when the friction of quiescence comes into play, and not when the surfaces are sliding over each other, in which case it has to be pressed into gear during the stopping and starting of the cranks. The clutch will not only become self-holding when the cranks have attained their full speed, but the greater the speed is the longer will a given pressure take to bring them up to it; and the result of this is that the spur wheels are also brought gradually to their work, whatever may be the rate at which they are driven.

This reversing gearing is applied to a rolling mill at Butterlay Iron Works that has now been at work some months. The rolls are 22 in. in diameter, and are run at the rapid rate of 45 revolutions per minute, and yet there is no perceptible sound or shock from reversing, even when bars upward of a ton weight are being passed through the rolls. In the Butterlay mill the diameter of the shaft at the neck is 12 in., and the diameter of the friction wheels in 36 in. This diameter of wheel, as Sir John Alleyne informed the Iron and Steel Institute meeting, was adopted at his particular request, the Messrs. Napier having fixed upon 24 in. as sufficient diameter; and he (Sir John) said that he was now quite satisfied that the diameter of the wheel was unnecessarily large, and that he would be quite satisfied with friction wheels of no greater diameter than 36 in. for his 30-in. plate mill.

In a set of reversing gear supplied to the Woolwich Arsenal, where the shaft is 14 in. diameter, the friction wheels are 42 in. diameter; but this again was not determined by the Messrs. Napier but by the Arsenal authorities. Messrs. Beardmore, of the Parkhead Forge, Glasgow, who are now making great extensions in their works, are having the differential friction gear applied to their new plate mill; and in this instance Messrs. Napier Brothers are left free to fix their own relative dimensions. They have put the clutches on a pinion shaft of 10 in. diameter, making 3½ revolutions for 1 revolution of the roll shafts, and they have only used an 18-inch friction wheel, which is rather less than double the size of the shaft. With these arrangements they are quite confident of getting perfectly satisfactory results. The same arrangement of mechanism as is used for reversing rolling mills, has for some time been applied successfully for working planing machines, bending rolls for iron shipbuilding, and many other machines. It is only recently that the Messrs. Napier succeeded in getting any one to adopt it for driving rolling mills.

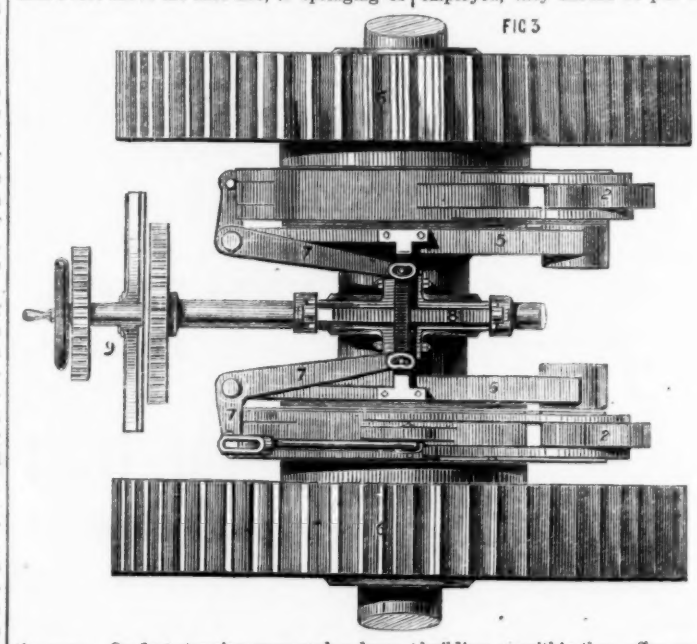
How Buildings are Made Fire-Proof in Italy.

A correspondent of the Providence *Journal*, writing from Florence, says:

The Italians are far in advance of us in the art of construction. They have better materials, and they use them more scientifically, as well as more skillfully. The plan of structure which I am about to describe is specially applicable to dwelling houses. Certain modifications, securing greater strength, would be necessary for warehouses. The principle of construction consists in providing for every apartment or room of the entire building an air-tight inclosure, formed of incombustible materials, so that wherever the fire may originate, it shall be confined to that part of the house, and having no vent, smolder on for hours or days, even until the smoke and gases escaping around the doors and windows reveal the danger. To secure this end, all the walls and all the dividing partitions of the house must be of brick or stone; the necessity of this is generally recognized by our builders, but unless the ceilings and the roof be made equally tight, and of materials equally incombustible, tight walls will be of little avail. The fire must be bricked down as well as bricked in, as its tendency upward, where it can find vent, is always stronger than its tendency laterally. There must be to every room a vaulted ceiling of brick springing directly from its four walls.

The lower stories in all the best houses here are built in this way, the upper story being sometimes finished with flat ceilings. The bricks used in constructing the vaulted ceilings are from 12 to 15 inches in length, by about 6 inches in breadth, and only 1½ inches in thickness; they are sufficiently baked to give them power to resist pressure, and free from vitrification of surface, which would prevent the firm adhesion of the cement by which their edges are united. In a room 20 by 24 feet the center or highest part of the dome need not be more than 3 feet above the base line, or springing of

FIG 3

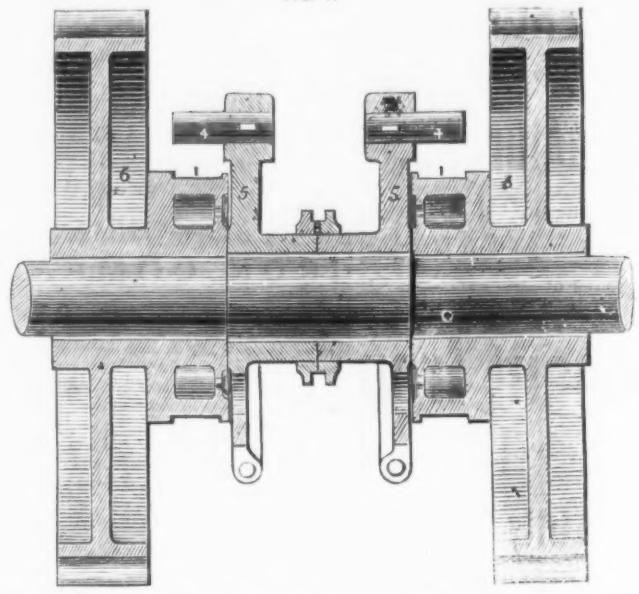


the same. On first stepping upon such a dome, I confess to a feeling of insecurity, but its ring under the tramping of feet quickly assured me of its strength.

The floor of a dancing hall, as the owner of the house informed me, had no other support. In cases where additional strength is required to resist the lateral thrust of the dome from increase of span, iron bars, firmly united at the four angles, are imbedded in them at the level from which the dome springs. Mr. Powers has kindly offered to procure for me drawings showing the plan and mode of structure, which I will forward to you as soon as received. If a ceiling so elaborately constructed, uniting with security the capacity for high ornament, be deemed too expensive, the same end may be less perfectly attained by placing the joists, which sustain the ceiling and floor above it, at a convenient distance to brick over solidly from center to center of the joists, care being taken to carry the brick flooring back of the wall-skirting of the room. If large joists be required to support the weight coming upon the floor, they may be put further apart, and cross joints placed between them for receiving the brick work. The bricks should be laid in mortar, and to form a good floor a second layer should be laid over the first, the bricks of the former crossing those of the latter at right angles. When the mortar has become sufficiently hard, the surface of the upper layer is brought to a perfect level by grinding it down with a slab of sandstone. Upon this leveled surface a solution of glue thickened with whiting or plaster of Paris is spread; this is largely absorbed by the bricks, and when dry, the surface is again brought to a level and polished. Lastly, a coat of boiled linseed oil is applied, and, after drying, this is rubbed down, when the floor becomes as hard and durable as marble. No covering of boards over it is necessary. This is the ordinary mode of finishing all the rooms of the inferior class, and the upper stories of the best class of houses. For greater security, the timbers supporting the floor might be encased in thin sheet iron, as, when thus protected, in a closed room, the fire would smolder on for a very long time before they would become sufficiently charred for the floor to give way. The roof should be treated in the same way as the ceilings of the rooms, the rafters bricked across from center to center, and the tiles or slates laid immediately upon the brick work. Here, where tiles are used, the roofs are so flat that no fastenings are needed, while with us it would be necessary to secure them firmly to the brick work.

A roof thus constructed will not be liable to kindle from the outside, and will smother down fire for a long time within. Another point requiring attention in the construction of fire-

FIG. 4.



proof buildings is the stairways. These running from story to story serve in the case of fire as a chimney through which a draft immediately establishes itself; there should, therefore, be as little combustible matter in the halls as possible, the stairs should be constructedof stone or iron, and the floors of stone or brick.

It is hardly necessary to say that Mansard roofs, composed as they are so largely of combustible materials, and placed frequently beyond the reach of the firemen, are a source of special danger. They should in no case be tolerated. In warehouses, where elevators are employed, they should be put outside of the building, as within they offer an unobstructed passage to the flames. To make a building fireproof, therefore, beside being composed, as far as possible, of incombustible materials, each room in it should be a closed chamber without communication through any channel with any other room, and the whole building should be in like manner a closed chamber. It is by smothering the fire as far as possible in the room where it originates, and delaying its progress from room to room, and from building to building, that we must seek protection against it. Without this precaution granite and iron, however largely they may enter into the structure of an edifice, as a painful experience has shown, are of little avail in arresting the progress of the devastating element. Our cities are also too compactly built. There should be, as in the cities of Europe, open squares at no great distance from one another, as these assist in restraining a fire and offer increased facilities to the firemen in subduing it. I am told that fires are of as frequent occurrence here as with us, but they very rarely extend beyond the apartment in which they originate. If you pass along the street where one of these fires has occurred, all that you see is a room with blackened walls, and furniture more or less charred.

FIG. 5

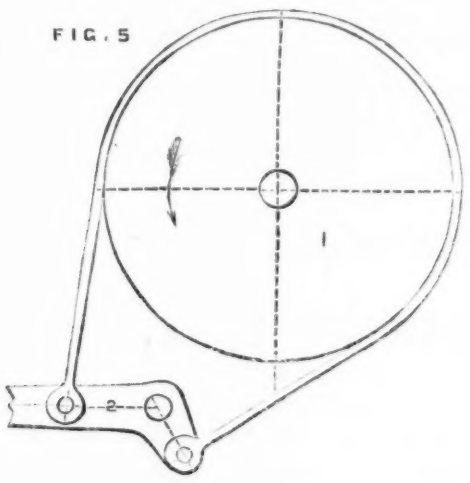
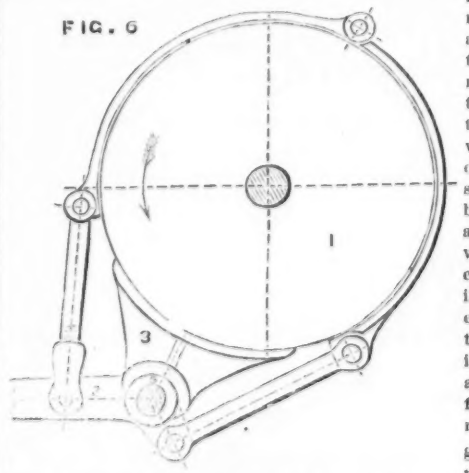


FIG. 6



The Process of Electro-Tinning.

A London electrotyper has invented a method of tinning metals which has just been put in operation in Birmingham by a company formed for that purpose. The deposited metal, of which tin is the principal ingredient, is of silvery whiteness, and will attach itself to all metals except zinc. The process is extremely simple, the white metal being merely deposited in its metallic form, from a solution, on a surface of articles exposed to the action of a galvanic battery. Prior to undergoing this galvanic treatment, the article, if rough and uneven on the surface, is scoured with sand, and any rust or oxidation is afterward removed by plunging the article in a bath of sulphuric acid and water. The presence of grease, or other impurity, would be fatal to the process. Therefore, on leaving the bath containing diluted sulphuric acid, the objects operated upon are plunged into a lye of hot potash, which renders them chemically clean. They are next passed on to the plating vat, where the process is completed. This vat, or deposit bath, is externally of teak, coated with marine glue, which coat is internally protected by an inner sheathing of pine wood, merely to prevent the glue from being cut or injured by the points or angles of heavy goods plunged into the bath, and thus the bath is made perfectly water-tight. The new vats are similar in principle to an ordinary electro-plating vat, and similarly contain a solution of the metal to be deposited. At one end of the vat is a plate of the metal in connection with one of the poles of a galvanic battery, while over it are metal bars connected with the opposite pole. The articles to be plated are hung in the solution from the bars by means of copper wire. As soon as they are placed in the solution galvanic action takes place, and almost in a moment they receive a white metallic coating. Some time, however, has to elapse to allow the plating to become thicker. On their withdrawal from the vat the articles are of a dull white color, and have to be subjected to the action of a metallic brush moistened with a cleansing fluid, and are thereby rendered of a bright silvery appearance. If additional brilliancy is required, the articles may be burnished in the same manner as ordinary electro-plate. One of the chief advantages claimed for the new method is that it completely obviates the liability of iron and steel goods to rust; and another feature in its application will probably result from the fact that electro-plated goods can now be prepared to receive their coat of silver by a white undercoat of metal, which will prevent the disagreeable effect at present so apparent in these articles, produced by the yellow glint of the original copper deposit showing through the worn silver coating. There are four large electro-magnet machines already on the premises, which will be worked by steam power.

At the Risdon Iron and Locomotive Works, they are building a very heavy pumping engine for the Imperial Mine, Washoe, capable of pumping from a depth of 3000 feet.

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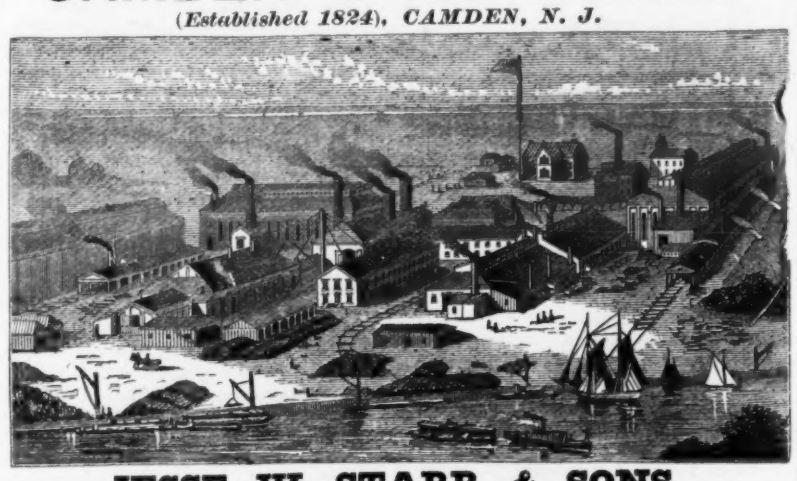

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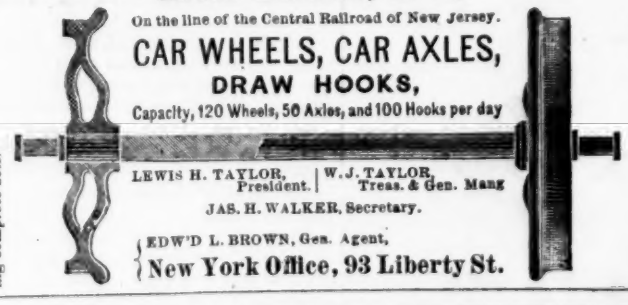

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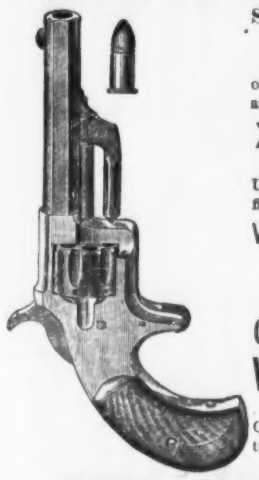

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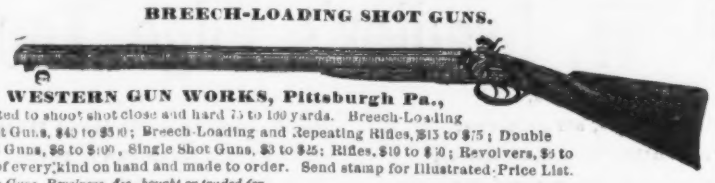

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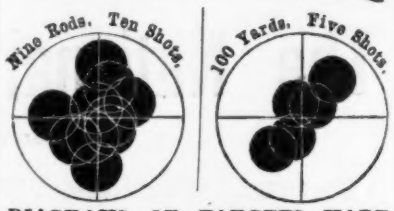

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Security Against Fires.

To the Editor of The Iron Age—SIR: About a year ago, after the Chicago fire, you published a letter from me, originally addressed to the Mayor of Chicago, advising the construction of special water-works in cities for use in extinguishing fires, cleansing streets, &c., but so arranged that these works might distribute water throughout the more densely settled portions of the cities under sufficient pressure to permit its being used as a power to drive printing-presses, elevators, and light machinery generally. I stated that the greater safety of life and property consequent upon the abandonment of the numberless small steam boilers in our warehouses, stores, and other buildings, would alone make this plan worthy of consideration. That I was well advised in the statement is proved by the fact that the great Boston fire originated from the furnace of one of such boilers. The old adage that "prevention is better than cure," should be kept in mind in all our arrangements to take care of fires, and, while I decidedly favor the Holly system of water-works it must be clear that if that or a similar system can be carried out so that, while affording protection against the spreading of fires, it will diminish the chances of their origin, and at the same time be more or less self-supporting, it will be of great advantage to the city. I don't, of course, pretend that such a mode of supplying power will be absolutely economical in all cases, but it will be so where only small power and for intermittent use shall be required. And as, in case the city shall adopt any system like the Holly, it will have to keep a constant pressure in the water pipes, and maintain the pumps in readiness for supplying a large volume of water at that pressure, it will, I think, find it economical to supply water for driving small water engines on terms which will make them cheaper, all things considered, than the steam engines now in use.

THE QUESTION OF THE HOUR.

The pressing question, however, is not how to get a larger supply of water—for the solution of this problem will involve long time and great expense, and should, therefore, receive very careful consideration—but it is how we may prepare as speedily as possible, and with the least expense, to utilize advantageously the water we have at command. Every experienced fireman and every observant person who has watched the quenching of fires by the apparatus now in use, is aware that in large conflagrations fully three-fourths of the water delivered by our engines fails to be of service, in consequence of the impossibility of bringing the streams properly to bear upon the fire; and that whenever the streams of water are well applied to fires immediately after their discovery, no large conflagrations occur.

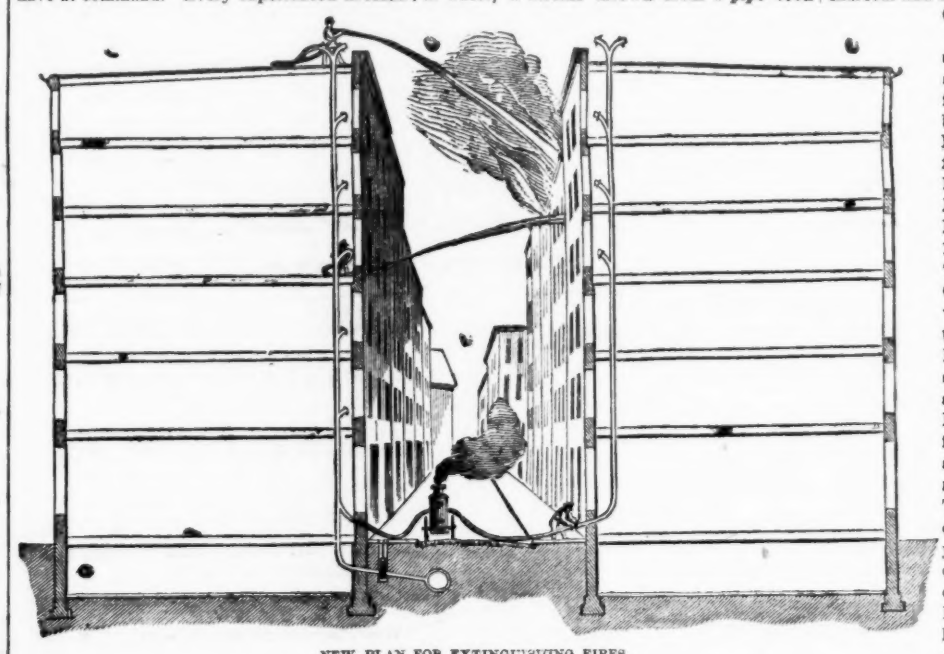
WHY FIRES DEFY CONTROL AND EXTEND.

It is very rare that a fire which is discovered burning near the ground gets under much headway, while it is equally rare that a fire at all well underway on the upper floors of our lofty buildings is brought under control till the upper portion of the building, if not the whole, is burned out. Beside the examples of the Chicago and Boston fires, numerous instances of this last experience will occur to all who have paid attention to the records of fires in this city and elsewhere, the cases of the burning of Jayne's eight-story granite building in Philadelphia, and the fire in Rand & Avery's printing-office in Boston, about a week ago, being pointed examples. Such fires, when they do not spread to adjacent buildings, burn down to within reach of our fire apparatus, and only then are they quenched.

No doubt Mansard roofs, which have of late, I think, been unduly abused, are very liable to catch fire if made of wood in consequence of the amount of exposed and projecting details in their construction; but in such conflagrations of those of Chicago and Boston, the character of the roofs has not been of so much importance as their hight from the ground, since, no matter what may be the quantity of water or number of engines at command, a brisk fire in the sixth story of a modern store or warehouse is nearly uncontrollable by our present modes of working.

There are several reasons for this fact to which I will call attention before explaining my plan of overcoming the difficulty. The reaction of a stream of water delivered with force enough to enable it to do service at the tops of our highest buildings makes it impossible for firemen to work it handily; and hose of sufficient strength and size to carry the water and stand the pressure required for projecting such a stream weighs so much when filled that it is difficult to move it about. Again, in our narrower streets, in which many of our highest buildings are, it is impossible to throw a stream from the ground at such an angle as to enable it to penetrate a fifth or sixth-story window so as to reach effectively the middle, not to say the back part, of one of our deep warehouses; and if the attempt is made to carry hose up through neighboring buildings, and so reach the fire, the bends and turns in it produce so much friction on the stream of water as seriously to impair its value, while the time lost in making such changes of hose gives a fire too much advantage. Carrying hose to the upper windows of buildings upon ladders, although one of their commonest experiences, is both a dangerous and very awkward operation for firemen, and it is difficult for them under such circumstances to give streams the changes of direction needed to enable the water thrown to do its work advantageously. At large fires, when firemen are chiefly employed in protecting adjacent property, the difficulty of getting water to the tops of lofty buildings is overwhelming. It cannot be thrown from the street with efficiency, and the quantity of hose used in leading water to the tops of buildings to be played from thence, soon exhausts the supply of the firemen and leaves them powerless. Hose carriages carry only a few hundred feet of hose each, and it will be apparent that the circle described by a large fire will soon exhaust all that our firemen are provided with, especially when, as not unfrequently occurs, they have to abandon long lines of it in consequence of the rapid progress of the flames preventing its removal.

The difficulty in forcing streams to a considerable hight from the ground does not arise from the lack of power in our engines, as was proven a day or two ago at the trial of one of them at the Equitable building. For, after the hose had been led to the top of that building, a stream was thrown, as stated in the reports of the experiments, 150 feet into the air; thus forcing water a total hight of 266 feet from the ground, or to a much greater hight than it could be thrown directly from the ground. The trouble in so forcing streams seems to be that, owing to the lack of cohesion of the particles of water, a stream thrown from a pipe soon loses its cylindrical solid form, and spreads into sprays, when its momentum is lost by the increased friction of these sprays in the air.



NEW PLAN FOR EXTINGUISHING FIRES.

THE NEW PLAN PROPOSED.

Now the plan I propose for obviating these difficulties and securing increased efficiency for the water used by our firemen is as follows, and will be clearly understood from the accompanying wood cut: Let there be leading pipes of metal acting as sections of metallic hose, fixed inside or upon the outside walls of every one of our lofty buildings, the lower ends of the pipes debouching from the buildings at or near the ground, and being provided with plugs to which the leading hose of our steam fire engines may be connected, and the upper ends projecting through the roofs of the buildings, and being also provided with connections for either hose of the same size as is ordinarily used on the engines, or of a smaller size, which may be readily carried about on men's shoulders. Plugs should also be affixed to these pipes in the several upper stories of the buildings, in which, or on the outside of which, the pipes are placed, and be so arranged that they may be readily reached from windows in these stories. These pipes may or may not be connected below to the water mains of the streets, and in most cases it would probably be preferred not to have them so connected, as there would then be no danger of their being burst by frost in winter and flooding the building with water. With an arrangement like this, and with our engines fitted, as they frequently are for use in small towns, so that they can throw four different streams of water, one engine could attach leading hose to the pipes of four separate buildings and enable streams of water, of sufficient size completely to protect these buildings, to be properly and economically distributed through and over them. It will also be clear that by means of such pipes firemen can effectively direct their streams from one building into and upon others, and the changes of position of their streams can be made by changing connections below and above with these pipes in one-fourth the time they can be made as now it is done. With 50 feet of light hose to each pair, firemen can work from roof to roof of adjacent buildings, and, signaling their fellows below at the engines to cooperate, can make connections with these pipes in the different buildings, as the case may require, and distribute water almost at will. It has been suggested to me by the intelligent foreman and engineer of the Vesey street engine, to whom I described my plan, that the leaders in buildings for taking off rain water can be made strong enough and be fitted for my purpose; and this may naturally occur to others. But as such pipes are occasionally clogged by accumulations of ice in winter, they cannot be easily employed. I submit this plan for the consideration of those interested in guarding against such conflagrations as have afflicted our sister cities, and shall be glad to give any further information required thereupon.

Z. S. DURFEE.

No. 56 Broadway, Nov. 23, 1872.

The Iron Industries of Wisconsin.

A correspondent, writing from Milwaukee, sends us the following interesting information respecting the furnaces of Wisconsin, with an estimate of the iron production of the State: The furnaces of the Milwaukee Iron Co., at Milwaukee, Wisconsin, use a fuel consisting of one half coke and one half anthracite coal. The ore employed consists of three-fifths Iron Ridge ore and two-fifths Lake Superior ore. The production of furnace No. 1 for 1872 has been 16,000 tons of pig iron; furnace No. 2, 17,000 tons. The furnace of the Northwestern Iron Co., at Mayville, Wisconsin, using charcoal as a fuel, and Iron Ridge ore, has produced, in 1872, 3000 tons of pig iron. The furnace of the Wisconsin Iron Co., at Iron Ridge, uses charcoal and Iron Ridge ore, and produced 3300 tons of iron. The furnace of J. F. Smith, at Ironton, in Sauk county, Wisconsin, uses charcoal and Sauk county ore, and produced 1300 tons of pig iron. The furnace of the National Iron Co., at Depere, Wisconsin, uses charcoal and Lake Superior ore; yield in 1872, 6500 tons. The furnace of the Fox River Iron Co., at Depere, uses charcoal and Lake Superior ore; its yield in 1872 was 7000 tons. The furnace of the Green Bay Iron Co., at Green Bay, Wis., uses charcoal and Lake Superior ore, and produced 6000 tons. The furnace of the Appleton Iron Co., at Appleton, Wis., uses charcoal and Lake Superior ore, and produced 6500 tons of iron.

The total production in Wisconsin in 1872 has been therefore about 67,600 tons. The probable increase of production in 1873 will be about as follows. The Minerva Furnace Co. is building a fifteen feet furnace in Milwaukee, to use half coke and half coal fuel, and Iron Ridge and Lake Superior ore. It will go in blast about June 1st 1873, and will make in 1873 about 7000 tons. The Appleton Iron Co. is building a new stack, and will make in 1873 about 6500 tons. The National Iron Co., of Depere, is building a new stack similar to the old, and will make about 5500 tons. The Fox River Iron Co. is building a stack similar to the old one, and is now about ready to blow, and will make in 1873 about 6500 tons. The furnace of the North Western Iron Co. was rebuilt this year and enlarged. In 1873 it will doubtless make 5000 tons. A charcoal furnace is building at Fond du Lac. It will probably go in blast about May or June, and should make in 1873 about 3200 tons. It is consequently safe to say that the increase in the production of pig iron in 1873 in Wisconsin, over 1872, will be about 33,000 tons.

The production of rails by the Milwaukee Iron Co. in 1872 has been about 35,000 gross tons, an increase of about 10,000 gross tons over 1871. The company has a new "top and bottom mill" about completed. This should enable them to make 12,000 tons more in 1873 than they have made in 1872. They expect therefore, to make about 47,000 tons of rails in 1873. These are the only rolling mills in this state.

Accident at a Philadelphia Iron Works.—Shortly before 12 o'clock yesterday morning, about 400 feet of the roof of the foundry of A. Whitney & Son's car-wheel works, situated on Pennsylvania avenue, Philadelphia, between Sixteenth and Seventeenth street, fell in. The roof covered a one-storied building about 25 feet in hight. It was of corrugated iron, bound and held by rods and bars of the same, and sustaining a ventilator. While the wind was blowing its heaviest, the western end of the roof was lifted, and in its descent the center gave way. The sides followed; the few workmen escaping. Two were slightly injured, Michael Collins and Gilbert Kennedy. The place for some time had almost suspended operations during repairs to the cupola. The force in this building generally numbers from 150 to 300 men. Large numbers visited the spot yesterday, notwithstanding the storm.

The Philadelphia *Trade Journal* comes to us in a new form, containing two additional pages of matter, and improved in its appearance. The present shape of the paper is similar to that of the *North American*, of the same city, and its complement of advertisements and well-filled columns give assurance that the same care and energy which has marked its past management will be exhibited in the future. The increase in size indicates past success and a growing circulation, and a determination on the part of its editors to make it in every way worthy of the confidence which has been reposed in it by the factories and business establishments of that city and vicinity.

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And all other kinds below 6 inches

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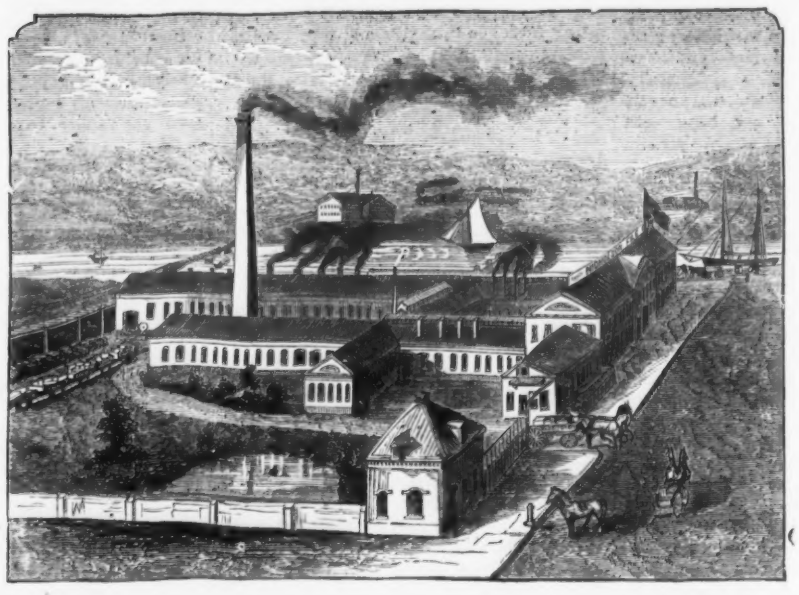

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THE NICHOLSON FILE.

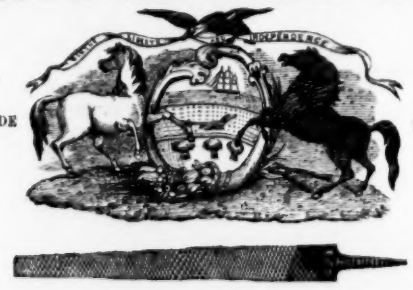
All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformityof machine work. It is now upwards of six years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

Our prices are as low as it is possible to furnish a really first-class File *from the best of File Steel*, and may be had, with full terms and conditions, by addressing the

NICHOLSON FILE COMPANY,

Providence, R. I.

PENNSYLVANIA FILE WORKS.

TRADE  MARK

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Improved Barn Door Hanger & Rail.

Patented April 11, 1871.

This Rail has a brace on both sides which brings it in the middle of the sill, and steadies it in such a manner that it cannot tip over or work the screws out. The hanger has a shoulder or projection at the top which allows the roller to sit squarely upon the rail, and prevents it being thrown off. The sheave and axle are cast in one piece, which keeps the sheave from turning over against the sides of the hanger. The entire bearings of the axle are chilled, causing it to work easily, and to be durable.

Fig. 1—Shows Hanger with the Projection (A) corresponding with the Brace (D) of the Rail.

Fig. 2—Shows the Rail with Double Brace (D and E).

Fig. 3—Shows Sheaf with Cast Axle (B) and Shoulder (C).

Figs. 4 and 5—Show chills used to chill the Axle (B) and its bearings.

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Turpentine Tools, all kinds,	Mill Picks, Mattocks & Picks,
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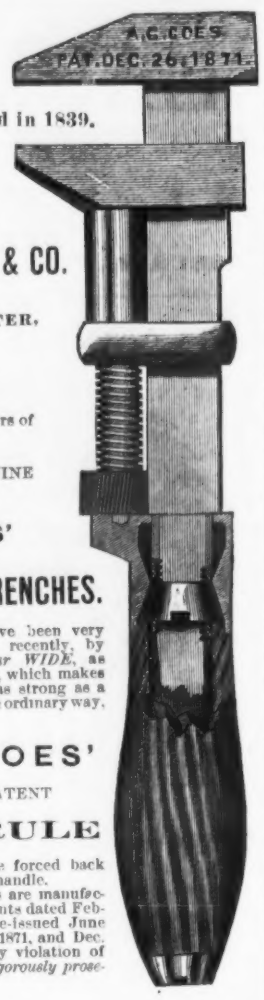

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THE GENUINE

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SCREW WRENCHES.

Our goods have been very much improved recently, by making the *Bar WIDE*, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

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Which cannot be forced back into the handle.

☞ Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be *vigorously prosecuted.*

We call particular attention to our new Patent Ferrule, with its Supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

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At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for the

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Middleton Building, No. 1 Rumford St., Liverpool.

The American Engine and Machine Manufacturing Association.

The Engine Builders' and Machinists' National Convention assembled in Cincinnati last week and effected a permanent organization for the promotion of the interests of the trade, under the name of the "American Engine and Machine Manufacturing Association." A portion of the proceedings relative to the details of trade affairs are only of local and special interest. The questions of more general importance considered by the convention included reports and discussions on the questions of credits, freight transportation, uniformity in rating powers, new tools, and labor and wages. The resolutions on these subjects are not necessarily binding on all the members, but they are important as embodying the collective views of practical men, and in that respect are worthy of consideration.

In relation to credits, the convention recommended that machinery should be regarded as a cash article, to be paid or settled for on sale or before delivery; that credits should be based on the actual acquired wealth and responsibility of purchasers or signers of notes, and not on prospective earnings or liens upon the machinery sold; that notes should be made payable at banks, and that credits on machinery should not exceed half the price nor more than six months' time.

The report on uniformity in rating powers is of general interest. The objects aimed at was to secure, as far as practicable, uniformity in the size of engines and boilers, as rated by the different makers, and at the same time allow for and encourage individuality of construction and arrangement, with constant incentive to improvement and the attainment of superiority. That there should be a mutual understanding between the maker and the purchaser, the latter having usually but little knowledge of such matters, it seemed necessary to avoid all scientific terms and formula, and to limit it to simple figures and statements, although not in all respects scientifically accurate. As a means of securing these desirable results, the committee recommended the following standard to manufacturers:

That four circular inches area of piston be the unit of commercial horse power for what is known as a high pressure steam engine. Provided, always, that it be so constructed, and of such proportions as to be capable of maintaining an average pressure of 35 pounds of steam to the square inch, with a piston velocity of 400 feet per minute or the equivalent. That in estimating boilers the whole of the fire and heating surface be accounted, and the standard of the cylinder boiler be 12 square feet, and for the boiler consisting in part of flues and tubes, it be 16 square feet as the unit of commercial horse power. Provided, always, that the boiler be so proportioned and arranged as to be capable of evaporating 45 pounds of water per unit of commercial horse power per hour.

A report of considerable trade interest was presented in relation to tools. At present employers are subjected to a heavy expense by the tendency of workmen to make new tools for special work. It often happens that workmen make different tools for the same article. These tools are put away and forgotten after the special work has been executed for which they were designed, and in old established factories thousands of dollars worth are stored up uselessly. It was suggested that in each factory the special tools should be stored in charge of a skilled workman who should register them, and charge each workman with them as wanted, concelling the check when the tool was returned. The report on this subject attracted much interest, and was laid over for future consideration.

It is to be regretted that the report on freights involved the common blunder of government intervention as a means for remedying the complaints against the railroad companies for excessive freights and discriminating rates. But this will only aggravate existing evils, and afford no substantial relief to the business community. In all other respects the proceedings of the convention were eminently practical, and are calculated to exercise a favorable influence in developing an important branch of American industry.

Illinois Coal Fields.—The following report from the surveyor of McLean county, Ill., shows the results of the inspection. It says: Number of acres of workable coal lands in McLean county, 774,235; number of veins of coal, 3; depth of first vein, 288½ feet; thickness, 3½ feet; depth of second vein, 388½ feet; thickness, 4½ feet; depth of third vein, 520 feet; thickness, 3 feet; mining is by shaft; number of mines in operation, 1; number of men employed, 170; yearly production, 60,000 tons; capital employed in mining, $100,000. The condition of the mine as to safety is good. But one fatal accident has occurred in the mine, and that was by a man falling down the shaft. Another was slightly injured by the explosion of gas in the mine, and another injured slightly by falling coal. The inspector makes no recommendation concerning the law.

The Cleveland Rolling Mill Company will immediately erect a brick foundry on the site of the one burned recently. The company lost heavily in patterns, as they were prepared to duplicate any part of their machinery at short notice. They will also soon replace their nut and bolt factory with a substantial brick building. They will not allow the fire to interfere with the running of the mills.

A new furnace is to be built at the Lambert Ore Banks, in Carter county, Tenn., about 50 feet in hight, with three tuyeres and a bosh of 13 feet, and make about ten tons of iron daily.

Saws.

H. W. PEACE,

MANUFACTURER OF

SAWS OF ALL KINDS.

FACTORY, WILLIAMSBURGH, N. Y.

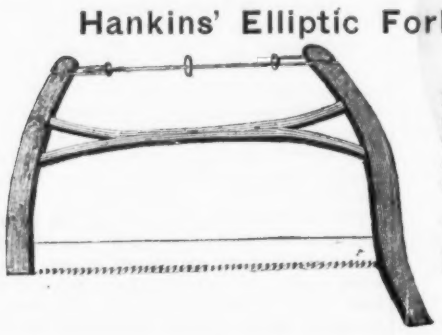
AMERICAN SAW CO.

Also, SOLID SAWS OF ALL KINDS.

Factory, Trenton N. J. Office, No. 1 Ferry St., cor. Gold St. N. Y

Hankins' Elliptic Forked Saw Frame.

Patented June 28th, 1870.



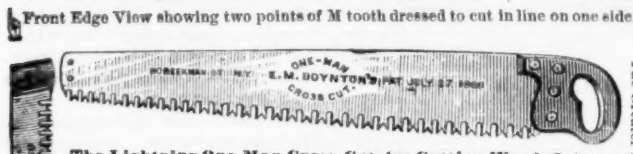
The annexed engraving represents HANKINS ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability.

These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace.

HARVEY W. PEACE,
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

BOYNTON'S LIGHTNING SAWS.

Front Edge View showing two points of M tooth dressed to cut in line on one side, and two on the other.



The Lightning One Man Cross-Cut, for Cutting Wood, Joists, Logs and Timber, and Sawing Down Trees.

The Lightning Saw has been awarded the American Institute Medal, 1872.

"You See how it is Yourself." Two Direct Cutting Edges, instead of One Scraping Point. The Greater includes the less.

WORKINGMAN'S TIME-SAVER. With Frame, only $1·25 each.

The superiority of the Lightning Saw over all others is now established beyond dispute. No man has ventured to put his saws in competition with them at the American Institute or elsewhere; and the challenge of $500 for a public trial has never been accepted. Wherever power and speed are wanted—wherever time and strength are too valuable to be wasted, there these Saws will assert their claim. One source of their power is that the teeth are formed to cut both ways, and each tooth having two direct cutting edges instead of one scraping point, it plows a clean groove through the wood, while the other teeth only crush their way through under hard pressure.

Facts and opinions given by gentlemen of the highest character, from their own observation and experience, fully sustain all that can be said in praise of this Invention. J. W. BLAKE, Esq., Superintendent of the American Institute, writes: "For all purposes of cross cutting large or small timber, your cross cuts and wood saws have no rival in speed or ease. Their universal use would save a vast amount of money and time, and lighten the labor of millions of men."

At the Bedford Farmers' Club, at Katonah, January 26, 1872, a leading farmer of Westchester county said that he had used the Lightning Cross-Cut Saw the last year, and that two men could cut more wood with it in one day, than in three with any other saw.

A practical lumber man also writes: "It is as easy to cut 20 to 25 thousand feet with the Lightning Saw as 8 to 10 thousand with the old V tooth. We get 80 cents per thousand for cutting—so the difference would pay for a saw in less than one day's work.

The Lightning Saws are now in use and for sale in every State and Territory of the Union, and are sent to foreign lands; indeed to very quarter of the world. More than 100,000 purchasers during the year 1872 add their testimony to the claims of superiority of the Lightning Saws.

These Saws are of all sizes, from the fine hand-saw of one foot long, to the ten-feet California Cross-Cut. Two men can use the one-man Saw, by attaching one of Boynton's Patent Handles, removable at pleasure. Many imitations are abroad that are deficient in some essential features, and I am prosecuting infringers in the United States Courts. None are genuine unless they bear the name of E. M. BOYNTON, and the date of the four patents. Every such saw has been rigidly inspected before leaving the factory, and is warranted to coil to touch ends without injury. A six-feet Cross-cut and a Buck-saw blade will be sent for Six Dollars.

For Catalogue, Price List and additional information, please address

E. M. BOYNTON,
Sole Proprietor and Manufacturer, 80 Beekman St., New York.

BEAM & MURRAY,

IMPORTERS OF

Anvils, Chains, Pocket Cutlery, Guns, Files,

BIRMINGHAM, SHEFFIELD & GERMAN HARDWARE,
Wostenholm's IXL Pocket Knives & Razors,
No. 54 Cliff Street, NEW YORK.

This cut shows the Snap pressed partly open.

MIDDLETOWN TOOL CO.,

MIDDLETOWN, CONN.,

Manufacturers of the celebrated

"BALDWIN" PLANE IRON,

made from W. & S. Butcher's extra cast steel, and enjoying the highest reputation for finish temper, and uniformity in quality, every Iron being warranted. Also

Henshaw's Patent Harness Snaps,

a cut of which is annexed. They have been in use for more than ten years and are universally acknowledged to be superior to all others. The sprin being of the best brass wire is not liable to rust or break, and is fall tected.

PLOW, FILLETTSTER AND DADO STOPS, &c., &c

Cutlery.

Landers, Frary & Clark,

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MANUFACTURERS OF

TABLE CUTLERY

OF EVERY DESCRIPTION. ALSO,

General Hardware,

IN VERY GREAT VARIETY.

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HENRY DICKINSON,

Sheffield Cutlery, Files, &c.,

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Manufactory, SHEFFIELD, ENGLAND.

Isaac Milner's Fine Pocket and Table Cutlery.
Howard Bro.'s Medium Pocket Cutlery.
J. B. Osberton & Co.'s Medium Table Cutlery.
Isaac Milner's Razors, Butcher and Hunting Knives.
Hargreaves, Smith & Co.'s "Imperial" Files.
Milner's "⚔" and Collins' "**IXL**" Hand Saws.

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CUTLERY AND RAZORS,
WASHINGTON WORKS, SHEFFIELD.

CORPORATE MARK.

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FRED'K WARD & CO., SHEFFIELD,
CUTLERY & TABLE KNIVES.

CORPORATE MARK.

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H & J. W. KING
ENGLISH
HARDWARE.
WOSTENHOLM'S
IXL
POCKET KNIVES,
KNIVES & FORKS,
RAZORS,
SCISSORS, FILES, CHAINS,
ANVILS, VICES,
GUNS.
80 CHAMBERS ST. NEW YORK

CORPORATE MARK,

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(LIMITED)

CELEBRATED CUTLERY,
No. 82 Chambers Street, New York.
CHARLES PEACE, Jr., Agent.

NOTICE.—The public is warned not to purchase as JOSEPH RODGERS & SONS' goods Cutlery stamped "ROGERS & SON" (note the absence of the letter D), with the star and Maltese cross, for such are spurious. Joseph Rodgers & Sons will thankfully receive from the trade information touching any such or other violation of their name and trade-marks, their determination being to continue to enforce the laws against such infringements.

New York, Oct. 2, 1871.

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No. 411 Commerce St., PHILADELPHIA,

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Washington Works, SHEFFIELD,
Celebrated I-XL Cutlery, Razors, &c

SOLE AGENT FOR THE UNITED STATES OF

WALTER SPENCER & CO.,
Steel and File Manufacturers,
Rotherham, ENGLAND.

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Granted 1777.

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Agent for

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Manufacturers of Razors, Table Knives, &c.,
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ESTABLISHED 1852.

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MANUFACTURERS OF SUPERIOR

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WARRANTED TO BE MADE OF THE BEST MATERIAL.

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Manufacturers of Patent

FINE PEN AND POCKET CUTLERY,

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We warrant our Knives equal in cutting qualities and workmanship to any made. We also make

SILVER PLATED POCKET KNIVES,

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E. BROWN'S STANDARD PORTABLE,
E. Brown's Improved
Gauntlet

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For Baker's Ovens, Boiler Flues, Galvanizing Baths, Oil Stills, Vulcanizers, Superheated Steam.

E. Brown's Portable Blast Gauge for the plug hole, Steam Gauges, Blast Gauges, Mercury Gauges, Recording Steam Gauges, Engine Counters, Indicators for ascertaining the Horse Power.

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Circulars on application.

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Manufacturers of Warranted Cast Steel

SAWS

OF EVERY DESCRIPTION,

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Circular, Shingle, Cross Cut, Mill, Hand, Roberts' and other Wood Saws,

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CAST STEEL FILES

of the well-known brand of

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Brundage Forged Horse Nails,

Manufactured from

BEST NORWAY IRON,

by BRUNDAGE & CO. Sold by

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MIDDLETOWN, ORANGE CO., N. Y.

LIVINGSTON'S

PATENT BRACED

WOOD SAWS,

Pat. BUTCHER & KITCHEN SAWS

Recognized Standard Goods for durability, quality and finish.

For sale by the Hardware Trade and

T. F. Cheritree & Co., New York.

We make a specialty of the LARGEST SIZES of **Circular Saws,** and call particular attention of lumber manufacturers to the following points of excellence

EVENNESS OF TEMPER.

The peculiar structure of our furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

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Our saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

PROPERLY HAMMERED.

Great care is taken that no saw shall leave our works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, can not be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of our Senior, who has devoted over *twenty years* to the art of saw making.

We are sole proprietors and manufacturers of the celebrated **"Clipper" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

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Excelsior Saw Works.

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WM. McNIECE,

Manufacturer of

Superior Cast Steel Hand, Panel, Ripping, Ice, Compass, Hack, Butchers' Bow, Grafting, Pruning, Keyhole and Web Saws, Mowing Knives, Trunk Springs,

And all other kinds of Springs, made from Sheet Cast Steel.

H. Croft's Scientific Concave and Convex Razor Strop

Is perhaps the only Strop manufactured on a strictly scientific principle. By a few passes over the Strop the Razor is enabled to pass through the hardest beard with ease, and is highly recommended by Barbers and all Scientific Men who have used it, and do cheerfully recommend it to be the best Strop that is sold in the market. The attention of dealers is solicited to this Strop, and wholesale men can have, on application, a sample Strop sent free of charge on application to the Patentee at Springfield, Ohio.

For Sale, &c.

Hardware Business For Sale,
At Quincy, Illinois.

The continued increasing demand for our

PATENT AUTOMATIC STEAM GOVERNOR,

Requiring our undivided time and attention to the prosecution of its manufacture, we hereby offer for sale our entire stock of Hardware, together with lease, fixtures and good will. This business was founded at its present location in 1844, by Messrs. L. & C. H. Bull, now prominent bankers in this city, and has since been successfully carried on by themselves and successors in both Wholesale and Retail Branches. Parties desiring a safe and permanent business in a growing and prosperous locality will find this an excellent opportunity to establish themselves upon easy terms, and from such we invite a thorough investigation. Address

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For Sale or to Lease, with privilege to buy, situated at Peekskill N. Y., the Foundry, Machine Shops and other buildings, with water front on the Hudson River, powerful steam engine, and other machinery entirely new, the premises comprising over two acres, and suited for a large manufacturing business. Address **"Manufacturer,"**
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Rolling Mill Machinery For Sale

One train, 3 high, finishing rolls, with steam engine 75 H. P.; and balance wheel, 20,000 lbs.—complete and in good order—by

Fearing, Rodman & Swift,
23 & 25 Commercial Street, Boston.
Boston, Nov., 20, 1872.

FOR SALE.
The Napanoch Blast Furnace, Ulster Co., N. Y. Splendid water power. Charcoal and Anthracite Coal in abundance, cheap. Apply to **H. Bange,**
34 Tompkins Place, Brooklyn, N. Y.

Rolling Mills For Sale or Lease.

The *"CALVERT ROLLING MILLS,"* situated in the city of Baltimore, were withdrawn from the sale advertised on the 16th of May, and are now offered at private sale, or will be leased to responsible parties. The terms will be made advantageous. The Mills are in perfect order, and can be put in operation at short notice.

For full information address
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Brick Buildings, Metal Roof, Molding Floor 82x124 feet, Engines, Blacksmith Shop, and everything in perfect order; can be started any day. Size of lot 300x140 feet, and adjoining half block can be bought if desired. Satisfactory reasons for selling. Terms easy.

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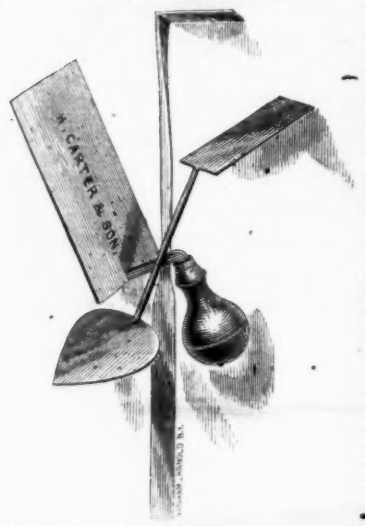

Moulders' and Plasterers' Tools.

Manufacturers of and dealers in all descriptions of Molders' and Plasterers' Tools, and dealers in

General Hardware, Gilded Copper Weather Vanes,
CARTER'S PATENT CARRIAGE LIFTING JACK, &c

Ornamental Wood Co.
Bridgeport, Conn.

MANUFACTURERS OF

Cabinet Ornaments and Trimmings

OF

Natural Woods,

in great variety of form,

Door Knobs, Escutcheons, Shutter Knobs,

Panel and Tablet Ornaments,

Drawer Pulls, Medallions, Rosettes,

LION HEADS, JEWEL BOXES, SLEEVE BUTTONS, etc., etc.

A new Illustrated Catalogue and Price List will soon be out for 1873, containing many new designs useful to the trade. This Company has no offices other than at factory, Bridgeport, Conn., and No. 5 West street, London, England.

The Sugar Maker's Friend.

PRICE, $4.50 per hundred.

More agents wanted to canvass and sell Post's Patent Galvanized Metallic Eureka Sap Spout and Bucket Hanger. Samples, Circulars and Terms sent on receipt of 90 cents to pay postage. Address
C. C. POST, Manuf. and Patentee, Burlington, Vt.

1872.

Review of the Hardware Market for the Year.

Week ending January 4.—Our first paragraph on Hardware in the issue of Jan. 4th was as follows: "The trade presents little of "interest to note beside the changes given "below. The attention of all classes of the "trade is very largely taken up with stock-"taking and other duties specially pertaining "to the end of the year. *The tone of the market "is very strong, and the tendency of goods is de-"cidedly upward.*" The correctness of this view has been sufficiently proved by the course of the trade since then.

The price of Tacks was advanced by the makers to discount 7½ per cent. from "list of prices," dated July 13, 1871, for any quantity. This cut off jobbers' profit and advanced the rate to the general trade 2½ per cent. Underhill Edge Tool Co. advance Tools and Hatchets to discount 10 instead of 15 per cent. C. Hammond & Son advance their prices about 10 per cent. Japanned and Silvered Lining and Saddle Nails advance about 10 per cent. Stocks and Dies quoted discount 25 and 10 instead of 35 per cent., and Sad Irons 4¼@4¾ cents per lb., instead of 4½. Wales, Minot & Co. issue a new list of their Stone Hammers, from which they take a discount of 20 per cent. Hermann Boker & Co. remove to their magnificent new store, Duane and Thomas streets. Hart Mfg. Co. make publication of the uniform system which they have been forced to adopt for the collection of their accounts. We print the new list of Taylor's Bells and Western Gongs, to take effect on the 15th. From this list a discount of 10 per cent. was taken instead of 10 and 10 @ 25 per cent. from the old list. The Pump Manufacturers fix their prices as follows: Cistern and Pitcher Pumps, discount 30 per cent.; Well, Set Length, Force Pumps, Hydraulic Rams, and Garden Engines, discount 25 per cent. Roy & Co. advance the price of Narrow Wrought Butts from discount 25 to 20 per cent., and advance some of their prices ½ cent per lb. E. M. Boynton issues a new price list of Saws. Quotations of Britannia Spoons advance from discount 35 @ 40 per cent. to discount 25 and 5 per cent.; on Plated, from discount 40 @ 40 and 5 per cent. to discount 33⅓ per cent.; on German Silver, discount 5 per cent. instead of discount 10 @ 10 and 10 per cent.; by the case, discount 10 and 5 per cent. A number of manufacturers of Casters adopt a new list, and prices advance from 5 to 10 per cent. Iron and Brass quoted discount 30 and 5 per cent., and Porcelain discount 30 and 10 per cent. These goods had been selling at ridiculously low prices. Nails are steady without change at $4·65 rates.

January 11.—Little business doing, but a good feeling prevails in business circles generally. Chain firm, without change. Peter Wright's Anvils advanced to 10½ cents, gold, per lb., for ordinary sizes; heavy weights, 11 cents, gold, and very scarce. Butcher's Mill Files advanced to $5·75, gold, from stock, or $5·50 for importation, on account of advance on the other side. Landers, Frary & Clark, in a circular, quote Brass Cocks discount 10 instead of 20 per cent.; Taylor's Petroleum Oil Faucets discount 30 and 10 instead of 40 and 10 per cent., and Bright Wire Goods, 50 and 10 per cent. Mallory, Wheeler & Co. issue a price list with some new Locks. Rope declines to 20 cents for Manila, ½ inch and larger, and some changes made in the classification. Hunt's Axes and Hatchets advance to discount 5 instead of 10 @ 10 and 5 per cent. The city Lock makers held a meeting and advanced their prices considerably. Percussion Caps advanced about 10 per cent. by the makers.

January 18.—Indications of the spring trade are about this time to be seen. Some travelers are out, and others are about to start. The Cutlery Association advance the price of Ivory Knives to discount 10 per cent., or 15 per cent. for prompt cash, instead of 15 and 20 per cent. respectively. Stebbins' Molasses Gates advanced to discount 40 and 10 instead of 45 and 10 per cent. The price for Curry Combs, previously irregular, is fixed at 25 per cent., with an extra discount for quantities. Hotchkiss Sons make the price for Mouse Traps 18 cents per dozen holes for small lots and 15 cents by the case. These goods had been selling at very low prices. A general advance in Solid Box Vises, Picks, Mattocks, and Grub Hoes is expected. Clark's, Parker's and Nicholson's Blind Butts are quoted discount 30 per cent. Metallic Cartridges advanced to discount 25 per cent. from stock. The list on Wilmot Base Knobs reduced about 25 per cent. on all but Enameled. Discount 10, instead of 20 and 10 per cent. Nicholson Mill Files advanced 5 per cent. English Coil Chain scarce and hard to quote. We consider a fair figure, 8 cents, gold, for ⅝ Coil, 53 cents, gold, for 6½-10-2 Traces, and 57 cents, gold, for 7-10-2. English letters report: Peter Wright's Anvils advanced 1/, to 28/ per cwt.; Curry Combs and Padlocks advanced 12½ per cent.; Corrugated Spoons 15 per cent., and all other classes of Hardware from 10 to 12½ per cent. 6½-10-2 Traces are quoted in England 1/1. At a meeting in Philadelphia the makers advanced Nails 10 cents per keg, or to $4·75 rates. Hermann Boker & Co. add to the line formerly kept by them a stock of Sheffield and Birmingham Hardware. Henry Disston takes into partnership another son, Albert H. Disston, making the firm Henry Disston & Sons.

January 25.—About this date a number of large Western buyers made their appearance in this market, buying, as a rule, large bills. Manufacturers generally were thinking of advancing their goods, and for this purpose a number of meetings were held. The Stove manufacturers of New Jersey and Eastern Pennsylvania met in Philadelphia on the 24th and advanced prices 10 per cent. The Lock makers made some advances in Rim work and in three or four numbers of Mortise Locks. Russell & Erwin Mfg. Co. advance the list on Steel Keys. Peter Wright's Anvils quoted 10½ @ 11 cents, gold. Blood's & Simmons' Axes advanced 50 cents, to $11·50 @ $12·50. Blood's other goods advanced 5 per cent. Simmons' Hatchets advanced nearly 10 per cent., and Broad Axes are reduced from $32 to $30 per dozen. We quote Carriage Bolts: Common, discount 65 and 5 @ 65 and 10 per cent.; Norway Iron, discount 50 per cent.; Eagle, Philadelphia, discount 45 per cent.; and Russell, Burdsall & Ward's, discount 55 and 5 per cent. Hand Bells advance to discount 60 per cent. Stanley Works make Narrow Butts, &c., discount 20 per cent. Trace Chains advance to 55 cents, gold, for 6½-10-2, and 60 cents for 7-10-2. Chain advances in Germany about 12½ per cent., but without advancing prices here, except for importation. Brass, Silvered and Oroide Carriage Bands advance to discount 5 instead of 10 and 5 per cent. A good many English goods are in small stock, and orders coming out very slowly. A new list for Spofford's patent Braces comes in force.

February 1.—Orders are coming in fast, and the prospects for a good spring trade are very promising. A good many buyers from distant cities are in town. Several meetings of manufacturers held in regard to prices. Peck, Stow & Wilcox Manufacturing Company issue their discount sheet, dated January 1st. We print in our issue of above date all the changes from their prices of July previous, as well as the changes in the list of Tinners' Tools. Sargent & Co. issue a discount sheet, with some alterations in list prices. We print all the changes in lists and discounts. Landers, Frary & Clark issue a discount sheet. We print the alterations in price, and the price list of a new Lock Cock, which they add to their line of goods. Carriage Bands and Shaft Tips are as follows: Silver Bands, list net; Brass Bands, discount 10 per cent.; Silver Shaft Tips, discount 15 per cent.; Brass Shaft Tips, discount 15 @ 10 per cent. Burden's Horse Shoes reduced to $5 per keg in Troy, and Providence Shoes to the same price in Providence. English goods are becoming scarcer, and prices continue rising both on the other side and here.

February 8.—Advices from England report continued difficulty in regard to labor; scarcity and high prices for coal. Many manufacturing establishments closed for want of coal—among those named being Peter Wright's and Peter Stubs'. In English Pocket Cutlery another advance of 8½ per cent. is reported, and Wostenholm and Rogers are said to be contemplating further advances. Chain is scarce and higher. We quote ⅝-inch, 8¼ cents, gold, per lb., as the general market price, though too low compared with cost of importation, and some houses are asking ¼ cent more. Traces are a shade higher, and Peter Wright's Anvils firm at 11 cents, gold, for ordinary sizes, and 11½ cents for heavy. The New York Stove makers advance prices 10 per cent. The Plane makers having fallen out, Planes are sold at irregular and extremely low prices. American Flask and Cap Company, and George M. Eddy & Co., advance Tape Measures to discount 10 and 10 per cent. Pen and Pocket Cutlery makers resolve to advance prices to discount 20 per cent. Solid Eye Sash Weights advance to 2¾@2⅞ cents per lb. The business of Hubbard Hardware Company, Middletown, Conn., and George B. Curtiss & Co., New York, consolidated under the name of Hubbard & Curtiss Manufacturing Company.

February 15.—The tone of the market continues strong, and advances continue to take place. Favorable advices are received from all quarters of the country, and orders are coming in well. Heavy English goods are materially stiffening, as all that are offered at low prices have been picked up. Peter Wright's Anvils 11⅓ @ 12½ cents, and his Vises 15 cents, gold, per lb.; ⅝ in. Coil Chain 8½ cents; 6½-10-2 Traces, 60 cents, and 7-10-2, 65 cents per pair—all gold. A new and advanced scale of prices for Solid Box Vises, heavy Hammers and that class of goods adopted. The break in the price of Planes grows worse, and there seems to be hardly any bottom to the market. Sandusky Tool Co. print discount 35 per cent. for first quality Planes, and discount 40 for seconds. Sargent & Co. and Hotchkiss Sons issue discount sheets, all the important parts of which we print. Yerkes & Plumb advance the list on Hatchets and Hammers about 10 per cent. Eagle and Gaylord Cabinet Locks are advanced to discount 30. Trunk Locks unchanged. The Association of Bolt and Nut Manufacturers of the United States adopt uniform lists (which we print in full) for the following articles: Square Nuts, Hexagon Nuts, Washers, Round and Square Head Machine Bolts, Lag Screws, Set Screws and Tap Bolts.

February 22.—An advance of five per cent. is reported in Coil Chain in England. The John Russell Mfg. Co., Lamson and Goodnow Mfg. Co., Landers, Frary & Clark, and the Meriden Cutlery Co., raised the prices of Ivory-Handled goods, and fixed the discount on all kinds of Table Cutlery at 10 per cent., or 15 per cent if paid within thirty days. We print the changes in lists at length in our issue of above date. Philadelphia makers advance the list price on Shovels, Spades and Scoops $1 per dozen, except Polished Iron Shovels and Spades, which, about January 1st, were advanced from $6·50 per dozen to $7, and are now made $7·50, and Black Iron Shovels and Spades, which are advanced from $5·50 per dozen to $6, the discount remaining unchanged—10 @ 10 and 5 per cent. Manufactured Copper advanced 2 cents per lb. by the manufacturers. Nails advanced 25 cents per keg—to $5 rates, and there is some talk of individual manufacturers making a further advance. We quote Carriage Bolts from jobbers' hands discount 60 and 5 @ 60 and 10 per cent. for Common, and discount 45 and 5 per cent. for Norway Iron. The manufacturers advance the list on Tire Bolts, adding 50 cents per 100 to all sizes of ¼ inch, and making 5-16 and ⅜ inch the same as corresponding sizes of Carriage Bolts. Charles Parker and Peck, Stow & Wilcox Co. advanced Coffee Mills to discount 20 per cent. for best, and 20 and 5 per cent. for common. Peck, Stow & Wilcox quote Carriage and Tire Bolts, discount 60 and 15 per cent., and Philadelphia pattern discount 60 and 5 per cent. Kettle Ears, discount 45 per cent. Wilson Mfg. Co. advanced Solid Box Vises to the following list prices: 30 to 159 lbs., 17 cents per lb.; 160 lbs. and upward, 20 cents. per lb. Brundage Horse Nails advanced 1 cent per lb., making No. 8 22 cents. per lb. Parkman's Spade reduced to $12 per dozen.

February 29.—Business continues very brisk and prices are still advancing. Heavy English goods are constantly growing scarcer. An advance in England of Peter Wright's Anvils to 30 per cwt. is reported by cable. Coil Chain here is without quotable change, but very scarce. Hart Mfg. Co. and Eagle Square Co., advance Steel and Iron Squares to discount 10 per cent., or 10 and 10 per cent. by full cases. Morris Axe and Tool Co. advance Axes about $1 per dozen, and the list on saleable sizes of Broad Hatchets $2 @ $2·50. Their discount on Hatchets, 10 @ 15 per cent. Belt Hooks advanced to discount 50 per cent. Enameled Kettles to discount 15 @ 20 per cent. Planes continue to sell at very low and irregular prices. Bed Screws advance. Importers of Glass held a meeting and adopted a new list. The Parkman Spade advanced to $13 per dozen.

March 7.—We doubt if ever so many changes in the prices of Hardware were made in the same time as in the week ending on the above date. At this time, No. 1 Foundry Iron, which was $36 at the beginning of the year, had advanced to $45, and was hard to get at that. The American, National, and United States Screw companies surprised the trade by a radical change in both lists and discounts. The List on Iron screws was revised and equalized, and a larger discount taken off, netting a reduction on the small and a considerable advance on the medium sizes that constitute the greater part of the business. We printed the full list and discounts. The manufacturers of Wrought Hinges, Butts, etc., advanced their prices materially. For instance, Strap and T Hinges from discount 20 and 7½ to 10 and 5 per cent. We have not space here to enumerate other articles. The American and New England Butt Companies advance Cast Butts as follows: Narrow Fast Joint, from discount 30 and 5 to 25 per cent.; Broad Fast Joint, from discount 40 and 5 to 35 per cent.; Common Loose Joint, from discount 50 and 5 to 45 per cent. The Union Mfg. Co. advance their Cast Drilled, Wire Jointed Butts as follows: Narrow Fast Joint, from discount 25 to 15 per cent.; Broad Fast Joint, from discount 35 to 30 per cent.; Loose Joint, from discount 45 to 40 per cent. The Tack manufacturers make a number of changes in their lists and discounts, making Half Weight (American iron) discount 70 per cent., and Full Weight discount 40 per cent., beside a cash discount of 7½ per cent. They also allow 5 per cent. on $500 in six months, and 7½ per cent. on $1000, to parties who have not undersold their prices. We print at full length the discount sheets of Hart Mfg. Co. and Sargent & Co. advancing most of their goods. Other makers of similar goods advance prices at the same time. "Champion" Coffee Mills, Tobacco Cutters, Cheese Knife and Bung Borer, advanced from discount 33⅓ to 20 per cent. Blood's Axes and Tools advanced $1, and Tools 10 per cent. above prices of January list. Weed, Becker & Co. advance Simmons' goods (except Axes) about 7½ per cent. Burden's and Perkins' Horse Shoes advanced to $5·50 per keg at the place of manufacture. Wire advanced to discount 25 @ 30 per cent. for Nos. 0 to 18, Bright and Annealed.

March 14.—The volume of business continues good, and trade is satisfactory as to both quantity and prices. We quote English Coil Chain 9 cents, gold, for ⅝; Traces, 6½-10-2, 62 cents, and 7-10-2, 67 cents, gold. All kinds of Chain scarce. Joseph Rodgers & Sons announce by circuar that "prices will advance at foot of invoice 10 per cent. on Scissors, and 5 per cent. on all other Cutlery from this date on all net goods. The discount on P numbers, charged gross, will be 15 per cent. on Scissors, and 20 per cent. on Spring and other Cutlery." An advance of 15 per cent. has taken place on the other side in English Fire Irons, and 7½ per cent. in English Padlocks. The change in values in England has been very general, even extending to articles that have for twelve years been without change. We print a new discount sheet of Russell & Erwin Manufacturing Company; also discount sheet of Landers, Frary & Clark, including revised list on Casters; also discount sheets of Peck, Stow & Wilcox Company; Hotchkiss Sons, Stanley Works, and Humason & Beckley Manufacturing Company. Hotchkiss Sons make Curry Combs discount 15 per cent., and Mouse Traps 36 cents per dozen holes, less 33⅓ per cent. discount. The Brass manufacturers advance prices 3 cents per lb. on Rolled and Sheet Brass, Brass and Copper Wire, Copper Rivets and Burs, Tubing &c. On Scrap the advance is 2 cents per lb. Brass Kettles are unchanged. The Union Manufacturing Company advance Japanned Screws to discount 20 per cent. from list of American Screw Company. Mallory, Wheeler, & Co. make Padlocks and Padlock Keys discount 40 and 2 per cent., cash, instead of 50 and 2 per cent. previously. The Rule manufacturers change list prices on two or three numbers, and advance prices from discount 35 and 10 to 33⅓ and 10 per cent. The American Screw Company and Wm. H. Haskell change the list on Gimlet Point Couch Screws. The principal makers of Clothes Wringers advance their prices. Steel Game Traps are quoted discount 25 per cent. for Newhouse, 30 per cent. for Hotchkiss, and 40 per cent. for Peck, Stow & Wilcox.

March 21.—During the week ending this date the price of Iron advanced $3 per ton. P. & F. Corbin, Hart Mfg. Co., Reading Hardware Co., Sargent & Co., Peck, Stow & Wilcox Co., and other manufacturers of the same class of goods, make a large number of advances on the prices adopted by them less than three weeks before. We print in our issue of above date the changes made by Sargent & Co. on about 175 articles. Nashua Lock Co. and Parker & Whipple advance Locks to discount 25 per cent., but none of the other manufacturers have changed their price. Judd's Burglar Proof Sash Fasteners, Nos. 50 to 62, inclusive, are now discount 30 per cent.; Regular Goods, Nos. 0 to 47, inclusive, discount 20 per cent. We print a list of the changes in discounts of the Wilson Mfg. Co. Carriage Bolts are firmer. We quote Common, discount 60 @ 60 and 5 per cent.; Norway Iron, discount 45 per cent.; Eagle, Philadelphia, discount 35 per cent. We quote Bellows, discount 15 @ 20 per cent.; Light Hand Bells, discount 50 and 10 per cent.; Belt Hooks, discount 45 and 10 per cent.; Wire firm but unchanged. We print the advanced prices established by the makers of Plain and Retinned Stamped French Tinware. The English File makers are revising the standard list of Files, and future orders are to be charged by the new list. Jowitt's Files advanced to £5·25, gold, to £. Newhouse Traps are quoted discount 22½ per cent., and 10 per cent. better on "Hawley & Norton." Henry Disston & Sons issue a circular, asking the trade not to compel them to advance by crowding orders upon them for more goods than are needed for the season's trade.

March 28.—The tone of the market continues very strong, and manufacturers generally refuse to take orders, except at prices ruling at time of shipment. Sheffield letters report that nearly all the grinders in Sheffield are on strike for higher wages. It is stated that if the demand continues, prices will be much higher. All kinds of Birmingham goods are very hard to get. Production is restricted by lack of coal, the miners of which are on strike, or demoralized by high wages, and all kinds of workmen are very uneasy. Peter Wright is overrun with orders and his men will not work, and are turning out only a small part of their usual product. The Stove manufacturers of Philadelphia and vicinity have advanced prices 10 per cent. The makers of Axes had a meeting and advanced prices about a dollar a dozen. Whitney & Wait have advanced Bronze Butts to discount 20 per cent. Russell, Burdsall and Ward's Carriage and Tire Bolts are 50 and 5 per cent. Galvanized Pump Chain, 14 cents per lb.; full casks, discount 5 per cent. Rope has declined half a cent per lb. Foster & Bailey, and Meriden Malleable Iron Co., have advanced their list on Casters, making independent lists and discounts of their own. The list on Waterman's Bake Pans is advanced on No. 11 to $5·50, other sizes remaining as before. Locks are in an unsettled state. Branford Lock Works quote 25 per cent. as their greatest discount. The Norwalk Lock Co. issue an advanced price list, which we print in full, subject to a discount of 50 and 2 per cent. for cash. This advances the net price probably about 15 per cent. on the average. The makers not named have made no change in their prices. We print in full the changes shown by a discount sheet issued by Hart Mfg. Co. The makers of Hammers, Vises, etc., advance prices. We print the changes in the list of the Trenton Vise and Tool Co., as a sample of them all. The Washoe Tool Mfg. Co. issue a new list, which we print. The Elmira Nobles Mfg. Co. change the list on Smead's Patent Whiffletree Hooks, the discount being 15 per cent. The manufacturers of Stair Rods advance their price from discount 25 per cent. to discount 15 per cent. Stanley Works advance a few goods. We print in full the new standard list of Wrought Brass Butts, subject to a discount of 25 per cent. The principal makers of Shears advance the list on Straight Trimmers. Walsh & Bro. issue a new price list of Curry Combs. Both of which lists we print, as also the list of Tubular Barrows, for which J. E. Halsey & Co. are agents.

[To be continued.]

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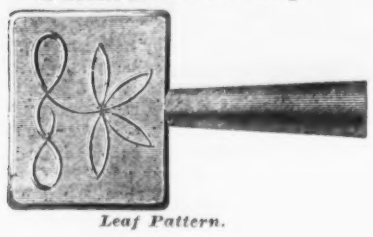
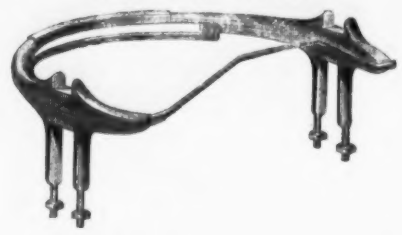


Leaf Pattern.

Established 1850.

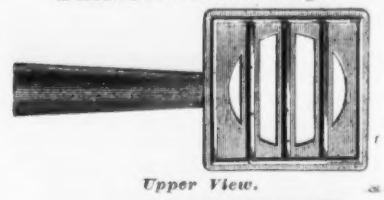
King Bolt Yokes.

No. 6 Fifth Wheels.



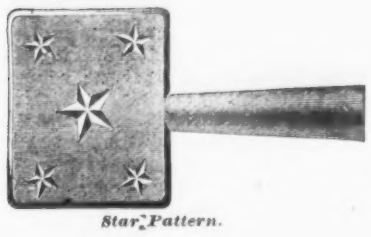
1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.



Upper View.

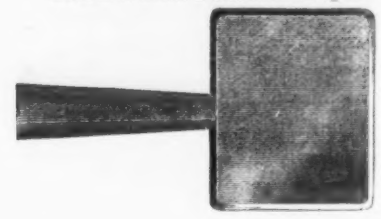
Lower View.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.

Solid Plain Pattern Steps.



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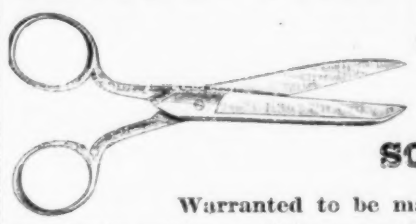

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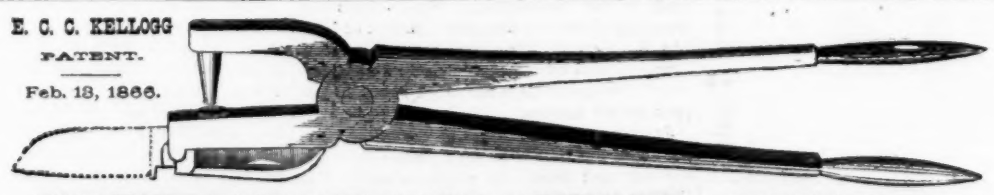

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Wallingford Fork Works, 100 Chambers, N. Y...14
Gage Cocks & Damper Regulators.
Murrill & Keizer, Baltimore, Md.....31
Galvanized Iron.
Letterts Marshall Jr., 94 Beekman, N. Y.....4
Gate Hinges, self closing, *Makers of*
Clark & Co., Buffalo, N. Y.....22
Glass, *Importers of*
Downing A. C. & Co., 57 Beekman, N. Y.....12
Governors, *Makers of.*
Lynde J. D., Philadelphia, Pa.....31
Grindstones.
McDermott J. & Co., Cleveland, O.....29
Wood Walter R. & Co., 283 and 285 Front, N. Y.....9
Grist Mills (portable), *Makers of.*
Leonard & Silliman, Bridgeport, Conn.....29
Gunpowder, *Makers of.*
Kneeland F. L. (Dupont) 70 Wall, N. Y.....28
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Hammers, etc., *Manufacturers of.*
Nelson Tool Works, 157 E. 32d, N. Y.....9
Minot & Co., 31 Oliver, Boston.....9
Handles, *Makers of*
Smith, J. W. & Co., Charlotte, Mich.....8
Hardware Auctioneer.
R. T. Hazell & Co., 118 Chambers, N. Y.....15
Hardware, *Brass and Galvanized.*
Tichout W. & J., 290 Pearl, N. Y.....2
Hardware, Commission Merchants.
Fernald & Sise, 31 Beekman, N. Y.....8
Gerzabek O. V., San Francisco, Cal.....8
Green R. M., 100 Chambers, N. Y.....15
Graham & Haines, 88 Chambers, N. Y.....26
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Jewett & Roberts, 102 Chambers, N. Y.....
Spear Bros., 2 S. Charles, Baltimore, Md.....8
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Hubbard & Curtiss Mfg. Co., 82 Chambers, N. Y..21
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Shepard Sidney & Co., Buffalo, N. Y.....26
Turner, Seymour & Judds, 64 Duane, N. Y.....8
Walsh, Coulter & Flagler, 83 Chambers, N. Y.....9
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Beam & Murray, 54 Cliff, N. Y.....10
Boker Hermann & Co., 101 Duane, N. Y.....22
Field Alfred & Co., 47 John, N. Y.....9
King H. & J. W., 80 Chambers, N. Y.....10
E. Frith, 16 Cliff, N. Y.....24
Van Wart & McCoy, 43 Chambers, N. Y.....9
Turnor R. A., 37 Chambers, N. Y.....10
Wiebusch F., 84 Chambers, N. Y.....22
Hardware Manufacturers.
Biddle Mfg. Co., 78 Chambers, N. Y.....22
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Hubbard & Curtiss Mfg. Co., 82 Chambers, N. Y..21
Kellogg Wm. P. & Co., Troy, N. Y.....7
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Many F. L. & Marshall, 48 Warren, N. Y.....24
Middletown Tool Co., 32 Chambers, N. Y.....10
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Providence Tool Co., 11 Warren, N. Y.....14
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Russell & Erwin Mfg Co., 45 Chambers, N. Y.....8
Skinner & Cooley, Watkins, N. Y.....8
Shattuck W. F. & Co., 113 Chambers, N. Y.....14
Stanley Works, 58 Beekman, N. Y.....22
Taylor Mfg. Co., New Britain, Conn.....21
Union Mfg. Co., 55 Chambers, N. Y.....24
Williams, White & Churchill, 73 Warren, N. Y...8
Wilson Mfg Co., 37 Chambers, N. Y.....12
Hardware Specialties.
Semple, Birge & Co., St. Louis.....32
Hoes, *Makers of.*
Peters Bros., Mfg. Co., Marshall, Mich.....14
Hoisting Engines, *Makers of.*
Morris Co. Mch. and Iron Co., 36 Cortlandt, N.Y...30
Otis Bros. & Co., 348 Broadway, N. Y.....31
Horse Nails, *Makers of.*
Ausable Horse Nail Co., 35 Chambers, N. Y.....32
Brundage & Co., Middletown, N. Y.....10
Globe Nail Co., Boston, Mass.....32
Pratt & Co., Buffalo, N. Y.....22
Hot Blast Stoves and Pyrometers.
Brown Edw., 311 Water, Phila.....10
Insurance, Boiler.
Hartford Steam Boiler and Inspection Co.....25
Iron Brokers.
Boynton Geo. A., 70 Wall, N. Y.....2
Hazard & Jones, 212 Pearl, N. Y.....4
Petit Wm. H., 72 Wall, N. Y.....4
Iron, Charcoal, Warm or cold blast.
Quincy John W., 98 William, N. Y.....4
Iron, Pig, *Importers of.*
Williamson James & Co., 69 Wall, N. Y.....4
Iron Dealers.
Abeel Brothers, 190 South, N. Y.....4
Bigelow & Johnson, 48 Pine, N. Y.....4
Borden & Lovell, 70 & 71 West, N. Y.....4
Buchanan Geo., 19 Birchin Lane, London, E. C...6
Cleveland Brown & Co., Cleveland, O.....6
Coddington T. B. & Co., 25 Cliff, N. Y.....4
Conklin & Huerstel, 99 Market Slip, N. Y.....4
Davidge & Wheeler, 78½ Pine, N. Y.....4
Fuller, Lord & Co., 139 Greenwich, N. Y.....4
Fuller, Dana & Fitz, 110 North, Boston.....2
Gardner Wm., 575 Grand, N. Y.....4
Hall, Kimbark & Co., Chicago.....6
Harrison & Gilloon, 558 to 562 Water, N. Y.....4
Jackson & Chase, 206 and 208 Franklin, N. Y.....4
Judson B. F., 457 and 459 Water, N. Y.....4
Matthews Chas. W., 138 Walnut, Phila.....6
Packard, Goff & Co., Youngstown, O.....2
Piersons & Co., 24 Broadway, N. Y.....4
Pope Thos. J. & Bro., 292 Pearl, N. Y.....6
Richards D. W. & Co., 92 Mangin St., N. Y.....4
Swan John E. & Bros., Glasgow, Scotland.....6
Smith Gam'l G. & Co., 342 Pearl, N. Y.....4
Warner A. B. & Son, 28 & 29 West, N. Y.....4
Williamson James & Co., 69 Wall, N. Y.....4
Whitney Alfred R., 58 Hudson, N. Y.....4
Iron, *Manufacturers of.*
Atwater, Wheeler & Co., New Haven, Conn.....6
Cartwright, McCurdy & Co., Cleveland, O.....6
Cleveland Rolling Mill Co., Cleveland, O.....6
Coffin Wm. E. & Co., 8 Oliver, Boston.....4
Elizabeth Iron Co., Elizabethport, N. J.....4
Ellis W. R. & Co., 17 Batterymarch, Boston.....4
Everson, Graff & Macrum, Pittsburgh, Pa.....4
Fulton, S. & Co., 412 Walnut, Phila.....6
Jones & Laughlins, Pittsburgh, Pa.....4
Leonard John, 450 & 451 West St., N. Y.....4
Milwaukee Iron Co., Milwaukee Wis.....4
New Haven Rolling Mill Co., New Haven, Ct.....4
Old Dominion Iron and Nail Works Co., Richmond, Va.....6
Phœnix Iron Co., 410 Walnut, Phila.....6
Rowland, Wm. & Harvey, Phila.....32
Iron, Hoop, *Manufacturers of.*
Wm. Clark & Co., Pittsburgh, Pa.....4
Iron, Sheet, *Manufacturers of.*
Reese & Co., Pittsburgh, Pa.....4
Iron, Swedish, *Importers of.*
Jessop Wm. & Sons, 91 and 93 John, N. Y.....28
Mitander Nils, 69 William, N. Y.....4
Page Ewd. & Co., Boston, N. Y. and Phila.....4
Lace Leather, *Manufacturers of.*
Coupe Wm. & Co., S. Attleboro' Mass.....31
Williams J. H. & N. A., Utica, N. Y.....31
Lanterns, *Manufacturers of.*
Howard & Morse, 45 Fulton, N. Y.....2
Taylor Mfg. Co., New Britain, Conn.....21
Lead and Tin Lined Lead Pipe, etc, *Mfrs.*
Colwell, Shaw & W. Mfg. Co., 213 Centre, N. Y.....2
Locks, *Manufacturers of.*
Romer & Co., Newark, N. J.....9
Sargent & Greenleaf, 55 Chambers, N. Y.....22
Trenton Lock Co., 48 Warren, N. Y.....24
Yale Lock Mfg Co., 1 Barclay, N. Y.....22
Machinery, *Makers of.*
Bailey T. R. & Vail, Lockport, N. Y.....31
Fishkill Landing Mch. Co., 63 Bleecker, N. Y..30
Greene D. A., 326 & 328 Delancy, N. Y.....30
Mason V. W. & Co., Providence, R. I.....31
Morris Co. Machine and Iron Co., Dover, N. J..30
N. Y. Steam Engine Co., 121 Chambers, N. Y...30
Chapin Maching Co., New Hartford, Conn.....30
Pratt & Whitney Co., Hartford, Conn.....30
Stiles & Parker Press Co., Middletown, Ct.....31
Watson Andrew, 537 Dickinson, Phila.....31
Machinists' Tools, *Makers of.*
Blaisdell P. & Co., Worcester, Mass.....31
Malleable Iron Castings, *Makers of.*
Barnett Oscar., Newark, N. J.....8
Pratt & Letchworth, Buffalo, N. Y.....12
Tower Daniel L., Elizabethport, N. J.....4
Meat Cutters, *Makers of.*
Whittemore D. H., Worcester, Mass.....25
Metal Dealers and Brokers.
Belknap Aug., 60 Beekman, N. Y.....2
Crane U. O., 104 John, N. Y.....2
Coddington T. B. & Co., 25 & 27 Cliff, N. Y.....2
Harnickell Max, 85 Beaver, N. Y.....2
Phelps, Dodge & Co., Cliff, N. Y.....2
Pope Thos. J. & Bro., 292 Pearl, N. Y.....2
Quincy J. W., 98 William, N. Y.....2
Thomson A. A. & Co., 213 and 215 Water, N. Y..2
Van Wart & McCoy, 43 Chambers N. Y.....2
Metallurgists.
Britton J. Blodgett, 339 Walnut, Phila.....14
Drown & Corliss, 1123 Girard, Phila.....14
Henderson James, 30 Broadway, N. Y.....14
Maynard & Van Rensselaer, 24 Cliff, N. Y.....14
School of Mines, E. 49, N. Y.....14
Mining and Railroad Tools, &c., *Makers of.*
Washoe Tool Mfg. Co., 61 Park Place, N. Y.....12
Molder's Tools.
Carter H. & Sons, 290 Pearl, N. Y.....11
Monuments, *Granite and Bronze*
National Fine Art Foundry, 218 E. 25th.....6
Nickel Platers.
Smith L. L. & J. T., 133 & 135 W. 25th St., N. Y..14
Smith L. A., 42 Mechanic St., Newark, N. J.....14
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Rowland Wm. & Harvey, 948 Beach, Phila.....32
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Gallaudet P. W., 3 and 5 Wall N. Y.....2
Nuts, Rolts, etc., *Makers of.*
Ætna Nut Co., Southington, Conn.....14
Arms, Bell & Co., Youngstown, O.....14
Clark Bros & Co., Milldale, Conn.....12
Fuller, Lord & Co., Boonton, N. J.....4
Haskell W. H. & Co., Pawtucket, R. I.....14
Lewis, Oliver & Phillips, Pittsburgh, and N. Y..14
N. Y. Screw Bolt Works, Ave. D & 11th, N. Y....9
Plumb, Burdict & Barnard, Buffalo, N. Y.....32
Rhode Island Nut Co., 11 Warren, N. Y.....14
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Oilers, *Makers of.*
White J. H., Newark, N. J.....32
Paints and Oils, *Dealers in.*
Devoe F. W. & Co., 117 Fulton, N. Y.....
Paper Dealers.
Hard Melvin & Son, 44 Beekman, N. Y.....21
Patent Solicitors.
Howson & Son, Phila., and Washington, D. C.....6
Whitney J. A., 128 Broadway, N. Y.....6
Picture Nails, etc., *Manufacturers of.*
Richards T. C. & Co., 47 Murray, N. Y.....2
Pipes, Fittings, *etc., Makers of.*
Eaton & Cole, 58 John, N. Y.....26
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Nelson, Finkel & Co., 439 E. 10th St., N. Y.....26
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Chas. Gregg Mfg. Co., 62 & 64 Gold, N. Y.....26
Washington Pipe Works, Boston.....26
Pipe, Water and Gas, *Makers of.*
Brick R. A. & Co., 89 White, N. Y.....6
Graff William & Co., Pittsburgh, Pa.....26
Starr Jesse W. & Sons, Camden, N. J.....6
Warren Foundry & Mch. Co., Phillipsburg, N. J..26
Wood R. D. & Co., 173 Broadway, N. Y.....4
Pipe Wrenches, *Makers of.*
Rice, Robbins & Co., Pittsfield, Mass.....26
Plane Irons, *Manufacturers of.*
Middletown Tool Co., Middletown, Conn.....10
Sandusky Tool Co., Sandusky, O.....26
Planes, *Manufacturers of.*
Sandusky Tool Co., Sandusky, O.....26
Stanley Rule & Level Co., 55 Chambers, N. Y....15
Plumbago Lubricator.
N. Y. Black Lead Works, 172 Forsyth, N. Y.....
Plumbers' Materials, *Manufacturers of.*
Carr Wm. S. & Co., 106 Centre, N. Y.....26
Presses, Power, *Makers of.*
The Stiles & Parker Press Co., Middletown, Ct..31
Pressure Blowers, *Makers of.*
Sturtevant B. F., 72 Sudbury, Boston.....31
Printing Presses. *Makers of.*
Woods Benj. O., 351 Federal, Boston.....31
Publishers.
Burr & Hyde, Hartford, Conn.....28
Pumps, *Makers of.*
Blatchley C. G., 506 Commerce, Phila.....15
Douglas W. & B., Middletown, Conn.....15
Rumsey & Co., Seneca Falls, N. Y.....15
Union Mfg. Co., 55 Chambers, N. Y.....24
Valley Mch. Co., Easthampton, Mass.....15
Rails, *Importers of.*
Congreve Chas. & Son, 104 and 106 John, N. Y...28
Hopkins S. W. & Co., 57 Broadway, N. Y.....4
Naylor & Co., 99 John, N. Y.....4
Smith Gilead A. & Co., 62 Broadway, N. Y.....4
Rails, Iron or Steel, *Makers of.*
Atkins Bros., Pottsville, Pa.....6
Cambria Iron Co., Johnstown, Pa.....6
Cleveland Rolling Mill Co., Cleveland, O.....6
Griswold John A. & Co., Troy, N. Y.....29
Springfield Iron Co., Springfield, Ills.....6
Joliet Iron & Steel Co., Joliet, Ills.....6
Razor Straps, *Makers of.*
B. F. Badger, 51 Elm, Charlestown, Mass.....26
Croft H., Springfield, O.....10
Rolling Mill Machinery, *&c., Manufacturers of.*
Moore James, Cor. 16th & Buttonwood, Phila....30
Rolls, Chilled and Sand, *Makers of.*
Garrison A. & Co., Pittsburgh, Pa.....4
Saddlery Hardware, *Makers of.*
Pratt & Letchworth, Buffalo, N. Y.....12
Sash Balances, *Makers of.*
Anderson Balance Mfg. Co., Pittsburgh.....21
Sash Locks, *Makers of.*
Clark & Co., Buffalo, N. Y.....22
Saws, *Makers of.*
American Saw Co., 1 Ferry, N. Y.....10
Cheritree T. F. & Co, N. Y.....10
Boynton E. M., 80 Beekman, N. Y.....10
McNeice Wm., 515 Cherry, Phila.....10
Ohlen & Lanman, Columbus, O.....10
Peace Harvey W., Williamsburg, N. Y.....10
Spear & Jackson, 98 Chambers, N. Y.....22
Wheeler, Madden & Clemson, Middletown N.Y...10
Saw Frames, Wood, *Makers of.*
Peace Harvey W., Williamsburg, N. Y.....10
Scales, *Manufacturers of.*
National Scale Co., 203 River, Troy.....32
Riehle Bros., 9th near Coates, Phila.....32
Shattuck W. F. & Co., 113 Chambers, N. Y.....14
Scissors, *Manufacturers of.*
U. S. Steel Shear Co., W. Meriden, Ct.....12
Screws, *Makers of.*
Miles F. S., 205 Quarry, Phila.....22
Silks, *Makers of.*
Cheney Bros., Hartford, Conn.....12
Smelting Works.
Du Plaine & Reeves, 760 S. Broad, Phila.....32
Stamped Tin Ware, *Makers of*
Farrington J. D., Jr., 26 Murray, N. Y.....8
Steam Hammers, etc., *Makers of.*
Dudgeon Richard, 24 Columbia, N. Y.....31
Ferris & Miles, 24th and Wood, Phila.....31
Stone Tools, *Manufacturers of.*
H. M. Chase, Worcester, Mass.....9
H. H. Harvey & Co., Augusta, Me.....9
Snaps, Harness, *Makers of.*
Middletown Tool Co., Middletown, Conn.....10
Spool Lifters, *Makers of.*
Chapin Machine Co., New Hartford, Conn.....31
Sporting Goods, *Dealers in.*
Barton, Alexander & Waller, 101 Duane, N. Y.....9
Squares, Steel and Iron *Makers of*
Hart, Bliven & Mead Mfg. Co., 243 Pearl, N. Y...26
Stationers' Hardware, *Makers of.*
Stephens C. B., Plainville, Conn.....21
Steam Pumps, etc., *Manufacturers of.*
Woodward Steam Pump Co., 76 Centre, N. Y.....15
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Fullerton & Hollingshead, Camden, N. J.....31
Steel Importers.
Carr J. & Riley, 82 John, N. Y.....28
Cocker Bros., Sheffield, Eng.....28
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Jessop Wm. & Sons, 91 and 93 John, N. Y.....28
Moss F. W., 80 John, N. Y.....28
Piersons & Co., 24 Broadway, N. Y.....4
Sanderson Bros. & Co., 16 Cliff, N. Y.....28
Sanderson Geo. & Co., 96 John, N. Y.....28
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W. Hawksworth, Ellison & Co., 72 John, N. Y..28
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Anderson & Woods, Pittsburgh.....29
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Cleveland Rolling Mill Co., Cleveland, O.....6
Griswold John A. & Co., Troy, N. Y.....29
Hussey, Wells & Co. Pittsburgh.....29
Miller, Barr & Parkin, Pittsburgh.....28
New Jersey Steel and Iron Co., Trenton, N. J...29
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Singer, Nimick & Co., Pittsburgh.....28
Stove Boards, *Manufacturers of.*
Shepard Sidney & Co., Buffalo, N. Y.....21
Stove Polish, *Makers of.*
Joseph Dixon Crucible Co., Jersey City, N. J....32
"Gem" Stove Polish, 172 Forsyth, N. Y.....
Twist Drills, *Makers of.*
Morse Twist Drill & M. Co., N. Bedford, Mass...30
Tackle Blocks, *Makers of.*
Burr & Co. 31 Peck Slip, N. Y.....31
Tin Ware, *Manufacturers of.*
Shepard Sidney & Co., Buffalo, N. Y.....26
Tacks.
American Tack Co., 117 Chambers, N. Y.....15
Grundy Geo. C., 12 Platt, N. Y.....15
Dunbar, Hobart & Whidden, S. Abington, Mass..15
Field A. & Sons, Taunton, Mass.....15
Loring Samuel, Plymouth, Mass.....15
Tags, Waterproof, *Makers of.*
Schencks, 55 Beekman, N. Y.....6
Tea Trays, *Importers of.*
Dickinson Henry, 66 and 68 Reade, N. Y.....10
Tinmen's Tools and Machines, *Makers of.*
Brombacher Charles, Tarrytown, N. Y.....24
Peck, Stow & Wilcox Co., 97 Chambers, N. Y...22
Turbine Water Wheels, *Manufacturers of.*
Capron Water Wheel Co., Hudson, N. Y.....24
Ellis & Bonney, New Bedford, Mass.....24
Swain Turbine Co., Lowell, Mass.....24
Whitehill, Smith & Co., Newburg, N. Y.....24
Tubes, Wrought and Galvanized. *Manufacturers of.*
Griffith I. J. & Bros., Philadelphia, Pa.....26
Vises.
Backus Vise Co., 78 Beekman, N. Y.....21
Fisher & Norris, Trenton, N. J.....21
Howard Iron Works, Buffalo, N. Y.....21
Wilson Mfg. Co., 37 Chambers, N. Y.....12
White Lead, *Manufacturers of.*
Brooklyn White Lead Co., 89 Maiden L., N. Y..24
Colgate Robert & Co., 287 Pearl, N. Y.....24
Cornell Lead Co., Buffalo, N. Y.....24
Jewett John & Sons, 182 Front, N. Y.....24
Lewis John T. & Bros., 231 S. Front, Phila., Pa..24
Union White Lead Co., 26 Burling Slip, N. Y....24
Wire, *Manufacturers of.*
Gilbert, Bennett & Co., 273 Pearl, N. Y.....2
New Haven Wire Co., New Haven, Conn.....4
Philadelphia Wire Works, N. 5th, Phila.....2
Townsend W. P. & Co., Pittsburgh, Pa.....2
Washburn & Moen Mfg Co., Worcester Mass....2
Wire Goods, *Manufacturers of.*
Corning Jasper E., 58 Cliff, N. Y.....2
Gilbert, Bennett & Co., 273 Pearl, N. Y.....2
Howard & Morse, 45 Fulton, N. Y.....2
Parker Samuel, Hartford, Conn.....2
Wire Rope, *Iron and Steel, Makers of.*
Roebling's John A. Sons, Trenton, N. J.....2
Wooden Ornaments, *Makers of.*
Ornamental Wood Co., Bridgeport, Conn.....11
Wrenches, *Manufacturers of.*
Coes A. G. & Co., Worcester, Mass.....9
Wrought Iron Goods, *Maker of.*
Auer John & Co., 203 N. 5th, Brooklyn, E. D....4
Maguire Jas. T., 115 Chambers, N. Y.....4
Wire, *Importers of.*
Field Alfred & Co., 47 John, N. Y.....2

The Lake Superior Company's Furnace.

The Marquette *Journal* says: This splendid furnace, which is now going into blast, is one of the most complete in detail of any so far erected in this country, and by far the finest one in the Lake Superior iron district. It is thoroughly practical and substantial throughout, without the least superfluity in the way of ornament, or claptrap in the way of hobby or experiment, as has of late been too much the case with new furnaces; and yet every detail is complete and every appliance so simplified that every movement in the operation of the furnace must be absolute and reliable.

It is located on the margin of the east side of Marquette Bay, its site, together with the docks used for the reception and storage of fuel, occupying an area of about five acres. The water front of the property affords 2000 feet of room for vessels, with an abundant depth of water and the best of dock improvements.

The work of construction above water level was commenced on the 10th of May last. The foundation for the stack was commenced on the bed rock, and carried up eleven feet six inches above water level to the hearth, leaving cells and a damp chamber beneath by which al moisture will be intercepted, and the difficulty which sometimes occurs through the drawing of water by the capillary attraction created by heat is entirely obviated.

The stack is an iron jacket, set on columns, lined with fire brick, 60 feet high, 17 foot boshes, and a 7-foot 6-inch hearth. It is provided with seven tuyeres, which, together with the blast pipes, are hung in stirrups and adjustable yokes, the L of the tuyere pipe being provided with a ball and socket joint, so that the entire apparatus will conform at all times to the action of contraction and expansion without opening the joints or being liable to derangement. The tuyeres are supplied with reducers, by which the volume of blast can be regulated without cutting off the pressure. This appliance consists of a series of rings which are made to fit in the nose of the tuyere, and which can be readily changed to suit the founder's requirements or the condition of the furnace. These rings, as well as the tuyeres, are finished perfectly smooth on the inside, so that the blast will be delivered to the stock in a solid volume, instead of being broken up, as is the case when it issues through an opening having ragged and irregular edges.

The furnace is provided with a bell and hopper top, and the waste chimney is carried up twelve feet above the top. The gas exit is an iron jacket lined with fire brick, and having an internal diameter of six feet. Its base rests upon a reservoir from which flues lead off to the hot blasts and to the boilers, the flues being provided with valves to regulate the supply of gas, and registers to regulate the supply of air. In this particular the appliances of the furnace are very complete to secure the most perfect combustion.

The hot blast is put up in two compartments, each compartment being provided with a combustion chamber twenty-one feet long by five feet wide, and six feet and six inches high, over which are laid in open space, with an arched wall and flame flues intervening, 720 feet of pipe of eight inches internal diameter and one and a half inches thick.

The premises occupied by the stack and hot blast, and as a casting house, are 50 by 130 feet, the casting floor being 50 by 68 feet.

The boilers are located parallel with the casting house. There are three in number, each 26 feet long by 42 inches in diameter, with two 16-inch return flues. They are placed in and surrounded by mason work, but the entire heating surface is exposed in one common chamber. Grate bars are provided for the temporary use of wood or coal, but the space in the rear of the bridge wall is left unfilled, thus affording all the space possible for the combustion of gas. The stack of the boiler furnace is 100 feet 6 inches high—so well elevated as to be above the influence of any wind which may surge over the bluff in the rear of the furnace.

Heaters are provided, with 180 feet of two inch pipe, and the water is passed into the boilers at almost a steam temperature. The stock hoisting apparatus is operated by steam upon an entire new plan. There are two vertical steam cylinders of 10 inch bore, half the length of the elevation, provided with plungers, to which the hoisting cable is attached. This cable passes up to a shaft provided with two drums, one being a large one upon which the hoisting platform is suspended, and the other the power drum, by which the movement of the apparatus is effected; and the large one from which the platform is suspended being twice the diameter of the power drum or pulley, the platform is moved two feet while the plunger in the piston moves but one, and thus the platforms are alternately carried up and down. The blast is furnished by a direct acting vertical blowing engine, with a blowing cylinder 7 feet in diameter and 4½ feet stroke, and a steam cylinder 34 inches in diameter and 4½ feet stroke. It is a massive yet compact and powerful piece of machinery. In the same apartment is the blast receiver, the water feeding tank, the heater and two steam pumps—one of the latter to serve the boilers and the other to serve the coolers around the tuyeres, but both fitted so as to be interchangeable and one to do the work of the other, or work together or separately.

The stock house is 76x100 feet, with posts 28 feet high. A railway trestle passes through it, with a turn table, from the bank in the rear of the furnace, where the ore is brought in from the M., H. & O. Railroad. The fuel is received on the dock in front of the furnace and moved to the stock house in carts. The iron foundations for two calcining kilns, each 20 tons capacity, has been put down in the rear of the stockhouse, where their contents will be readily

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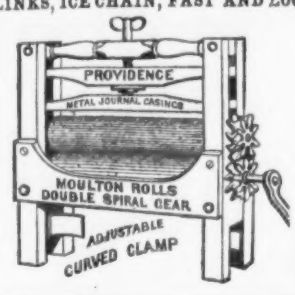
Providence, R. I.,

Manufacturers of

SQUARE AND HEXAGON COLD AND HOT PRESSED NUTS, PICKS, BOLT ENDS, TURN BUCKLES, CHAIN LINKS, ICE CHAIN, FAST AND LOOSE JOINT HINGES.

Providence Clothes Wringer

Reliance Clothes Wringer



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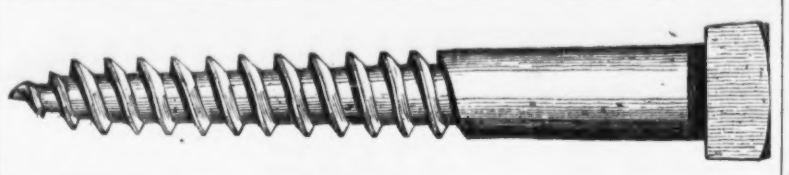
H. B. Newhall, Ag't.

NEW YORK.



WM. H. HASKELL & CO.,

Pawtucket, R. I.,

Manufacturers of

Machine and Plow Bolts,

Coach Screws, Set Screws & Tap Bolts.

Warerooms, No. 11 Warren Street, New York.

H. B. NEWHALL, Agent.

No. 11 Warren Street, NEW YORK.

READING HOT PRESSED NUT WORKS.

OF

J. H. Sternbergh,

READING, PA.,

H. B. NEWHALL, Agent, New York,

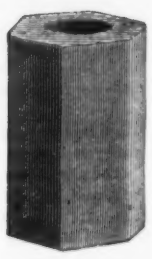
Manufacturing my own stock of Iron from the Pig Metal, and making all sizes of both Square and Hexagon Nuts for ¼ inch Rods and upward to 2 inch Rods, inclusive, I am able to control quality, and offer a superior article in either large or small quantities, at the lowest possible price.

No. 11 Warren Street, NEW YORK.

RHODE ISLAND NUT CO.,

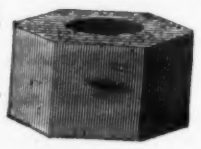
Providence, R. I.,

Manufacturers of



Patent Rolled Hexagon Nuts, Rods and Tubing.

The Patent Rolled Nut is superior to the best Forged Nut.



In the Patent Rolled Nut the iron is not cut away or punched aside to form the hole, but is rolled over a rod by heavy iron rollers. This process refines the metal. Its fibers are not torn and shocked. It is cut without injury to the tap. The even surface and the general finish of the Nut commend it to machinists.

Warerooms, No. 11 Warren Street, New York.

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No. 11 Warren Street, NEW YORK.

LEWIS, OLIVER & PHILLIPS,

MANUFACTURERS OF

Merchant Iron & Heavy Hardware,

Carriage, Machine, Square Head, Bridge and Skein

BOLTS,

Nuts, Washers and Coach Screws, Harrow Teeth, Plow Handle Extension Rods, &c.

Bolts, Spikes & Wrought Iron Shapes,

For BRIDGES, DAMS, PIERS, BREAKWATER and other permanent structures, made promptly at a small advance in price of iron.

FOUNDATION BOLTS FOR DAMS, with ends slit by machinery.

Hook and Eye, Screw Hook and Strap, and Strap and T Hinges.

Originators and Patentees of their new line of

WAGON HARDWARE,

Comprising Patent Wagon Box Strap Bolts and Wrought Iron Bolster Plates, Large Head Wagon Rivets, Neck Yoke Eyes, King Bolts, Box Rods, Rubber Plates, Axle Bolts, Queen Bolts, Tongue Cap, Sand Band, Single Tree and other Labor Saving odd shapes of Iron. Send for Prices to

LEWIS, OLIVER & PHILLIPS,

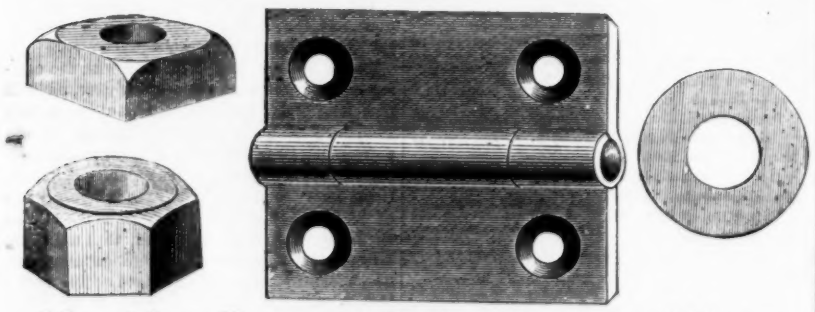
91 and 92 Water Street and 114 and 116 First Avenue, PITTSBURGH, PA.

Or H. B. NEWHALL, Agent, 11 Warren St., New York.

No. 11 Warren Street,

THE ÆTNA NUT COMPANY,

Manufacturers of



Machine Forged & Hot Pressed Nuts,

Washers, Bolts, Wrought Narrow Butts, Table and Trunk Hinges,

Fellow Plates, Axle Clips, Wrought Clip Yokes, Rivets and Burs,

We desire to call your attention to our **MACHINE FORGED NUTS.** They are made from extra quality of Iron, combining *lightness* and *strength*, and are especially well adapted for *Agricultural Machines* and *Carriage Work*.

Our **WASHERS** are made on improved machines—making them *perfectly flat*, smooth and true, and are warranted superior to any in market.

Factory at SOUTHINGTON, CONN.,

On line of Canal R. R., 22 miles from New Haven.

ARMS, BELL & CO.,

Manufacturers of

Carriage, Tire & Square Head Bolts.

Cold Pressed Nuts and Washers, Etc.,

YOUNGSTOWN, OHIO.

Price lists sent on application.

THE BEST IN USE.

Susceptible OF 32 Changes.

The Best Black Walnut Alarm Drawer in the Market.

The *Hardware Trade* is rapidly entering into its sale. A full sized drawer on brackets, for counter sample, will be furnished; should an order follow, wholesale prices only will be charged for sample.

We Sell only to the Trade.

TUCKER & DORSEY

Indianapolis, Ind.

American Chain Cable Works,

28 *Years' Experience in the Business.*

KENDRICK & RUNKLE, Trenton, N. J.,

Manufacturers of Cable, Crane, Coal Mine, Slope, Car Brake Chains, Traces, Breast, Binding, Cow and Log Chains of all kinds.

N. B.—The highest grades of Crane Chains a specialty.

The Warren Hoe

Has been introduced in thirty States, and from all quarters Merchant Customers have increased their orders for 1873, and pronounce it a **Perfect Success** for **Field or Garden Uses.** It is made of the best material, has a trowel temper, and is finely finished. We solicit Sample Orders and advise handing them out to good judges for a thorough trial, **as the Hoe best recommends itself,** and is bound to supersede all others

For Prices, Merchant Circulars, &c., address

PETERS BROS. MFG. CO., Sole Proprietors,

MARSHALL, MICH.

Patented May 10, 1870. Re-issued July 4, 1871.

Wallingford Fork Works,

Factory, Wallingford, Vermont.

ISAAC G. BATCHELLER, Supt.

Manufacturers of all kinds of

GOLD CROSS TRADE MARK.

HAY, MANURE AND SPADING

FORKS.

We desire to call the attention of the trade to our various styles of **AGRICULTURAL FORKS,** which are manufactured out of Extra Double-refined English Cast Steel, with the latest and most approved machinery, and none but the best material is used in every part of the manufacture.

EVERY FORK IS WARRANTED.

Tanners', Coke, Sluice, Oyster, and particular styles of FORKS made to order.

GRASS, GRAIN, AND BUSH SCYTHES; HAY AND STRAW KNIVES CORN CUTTERS, GRASS HOOKS, WEEDING KNIVES, &c.

Agents for "Bryan's Patent" Barley and Stable Forks.

A large assortment of all kinds of **HANDLES,** including **SHOVEL,** constantly hand, for either home or export trade.

All Orders and Correspondence should be addressed direct to us, at our office.

Office, 100 CHAMBERS ST. N. Y.,

RICHARD M. GREEN,

W. F. SHATTUCK & CO.,

113 Chambers and 95 Reade Street, New York.

MANUFACTURERS OF AMERICAN HARDWARE.

Coes & Taft's Pat. Wrenches.
Axe, Pick, Sledge & Hammer Handles.
Hatchet, Auger, Chisel & File Handles.
Mallets, Pat. Boot Jacks.
Gimlets and Gimlet Bits.
Augers and Auger Bits.
Cocoa Nut Dippers.
Mouse Traps. Wire Selves.
Scale Beams.
Patent Tap Borers.
Tool Chests.
Climax Horse Collars.
Brundage Horse Nails.
Maguire's Wr't Iron Goods.
Shattuck's Platform Counter Scales.
Yaw's Cow Bells.
Axes, Picks and Hatchets.
Hammers, Crow Bars.
Sad Irons.
Boring Machines.
Cast Iron Hatchets
Coffee Mills.
Star Steel Spoons.
Stocks and Dies.

Metallurgical.

MAYNARD & VAN RENSSELAER.

CONSULTING

Mining and Metallurgical

ENGINEERS,

Experts in Iron and Analytical Chemists.

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George W Maynard. Schuyler Van Rensselaer.

DROWN & CORLISS

Analytical Chemists

And Consulting Metallurgists,

1123 Girard Street, Philadelphia.

THOMAS M. DROWN. GEORGE F. CORLISS.

Purifying Cast Iron.

HENDERSON'S PATENT PROCESS

By these processes Anthracite and Coke Pig Irons are refined and contain *no silicon or silicates*, and are *purer than any Cold Blast Charcoal Pig Iron*; and the carbon may be kept in the graphitic or changed to the combined form.

Steel of superior quality can be made from ordinary Pig Iron, *by partial decarbonization, without labor*, and a less cost than Bessemer Steel.

Wrought Iron *entirely free* from silicon, phosporus and sulphur, or *chemically pure*, may be produced by these processes without puddling.

JAMES HENDERSON,

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The Iron-Masters' Laboratory.

Exclusively for the Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestones Clays, Slags & Coal for Practical Metallurgical Purposes.

No. 339 Walnut Street, Philadelphia.

J. BLODGET BRITTON.

This Laboratory was established in 1866 at the instance of a number of Practical Iron-masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace Forge, and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron Insoluble Silicious Matter, Sulphur and Phosphorus in an Ore	$12 5
For each additional substance	1 50
For simply determining the per cent. of Pure Iron in an Ore	4 00
For determining the per cent. of pure Iron, Sulphur, and Phosphorus in a Pig Iron	15 00
For each additional substance	3 00
For determining the per cent. of Carbonate of Lime, Insoluble Silicious Matter, Oxide of Iron and Alumina in an ordinary Limestone	10 00
For each additional substance	1 50

For a Furnace per annum (determining the per cent. of Pure Iron, Insoluble Matter, Sulphur and Phosphorus in Ores; Pure Iron Sulphur and Phosphorus in Pig Irons; Carbonate of Lime, Insoluble Matter, Oxide of Iron and Alumina in Limestones; and Pure Iron and Silica in Slags—number of samples limited to 20)..200

For each additional substance (in Pig Irons $3 00). 1 5

For a larger number of samples the charge will be in proportion.

For a Forge or Rolling Mill, per annum, the charge must necessarily depend upon the size and requirements of the works.

The time required for making a full analysis is usually from three to five days

SCHOOL OF MINES,

COLUMBIA COLLEGE,

East 49th Street NEW YORK.

FACULTY:

F. A. P. BARNARD, S. T. D., LL. D., President.
T. EGLESTON, JR., E. M., Mineralogy and Metallurgy.
FRANCIS L. VINTON, E. M., Mining Engineer.
C. F. CHANDLER, Ph. D., Analytical and Applied Chemistry.
JOHN TORREY, M. D., LL. D, Botany.
CHARLES A. JOY, Ph. D., General Chemistry.
WILLIAM G PECK, LL. D., Mechanics and Mining Surveying.
JOHN H. VAN AMRINGE, A. M., Mathematics.
OGDEN N. ROOD, A. M., Physics.
JOHN S. NEWBERRY, M. D., Geology and Palæontology.

The plan of this school embraces a three years' course for the degree of ENGINEER OF MINES, or BACHELOR OF PHILOSOPHY.

For admission, candidates for a degree must pass an examination in Arithmetic, Algebra, Geometry and Plane Trigonometry. Persons not candidates for degrees are admitted without examination, and may pursue any or all of the subjects taught. The next session begins October 2nd, 1871. The examination for admission will be held on June 23rd and September 29th, 1871. For further information, and catalogues, apply to

DR. C F. CHANDLER

DEAN OF THE FACULTY.

Nickel Platers.

L. A. SMITH,

NICKEL PLATER,

LICENSED BY

UNITED NICKEL CO. OF NEW YORK.

Premium Awarded by the N. J. State Fair,

42 Mechanic St., NEWARK, N. J.

L. L. & J. T. SMITH,

Successors to L. L. SMITH & CO.,

NICKEL PLATERS,

133 & 135 West 25th St.,

Between 6th & 7th Avenues, NEW YORK.

Pumps, &c.

W. & B. DOUGLAS,

MIDDLETOWN, CONN.

The Oldest and Most Extensive Manufacturers of

PUMPS,

HYDRAULIC RAMS,

GARDEN ENGINES

AND OTHER

Hydraulic Machines

IN THE

UNITED STATES.

Several Hundred Kinds, Styles and Varieties of these Articles in Large Stock, constantly on hand.

Highest Medal awarded them by the Universal Exposition, at Paris, France, in 1867.

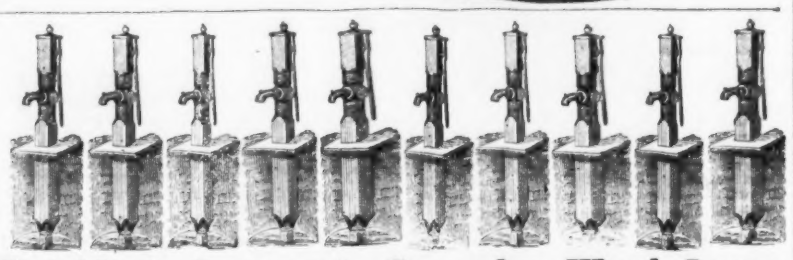
Descriptive Catalogues and Price Lists sent when requested.

BRANCH WAREHOUSES,

85 & 87 John Street, NEW YORK.

AND

197 Lake St., CHICAGO, Ill.



Blatchley's Improved Cucumber Wood Pump.

Trade (B) Mark. Patented.

Tasteless, Durable, Efficient and Cheap. The best Pump for the least money. Attention is especially invited to Blatchley's Patent Improved Bracket and New Drop Check Valve, which can be withdrawn without removing the Pump or disturbing the joints. Also the Copper Chamber, which never cracks or scales, and will outwear any other. For sale by dealers everywhere. Send for Catalogue and Price List.

CHAS. G. BLATCHLEY, Manufacturer, *506 Commerce St., Philadelphia, Pa.*

Tacks and Rivets.

A. FIELD & SONS,

Manufacturers of

COPPER & IRON TACKS, TINNED TACKS,

SUPERIOR SWEDES IRON TACKS,

For Upholsterers' use, Saddlers' supply, Card Clothing, &c., &c. **AMERICAN and SWEDES IRON SHOE NAILS,** Zinc and Steel Shoe Nails, Carpet, Brush and Gimp Tacks, Common and Patent Brads, Finishing Nails, Annealed Trunk and Clout Nails, Hob and Hungarian Nails.

COPPER AND IRON BOAT NAILS.

Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails.

Leathered Carpet Tacks, Glaziers' Points, &c., &c.

TAUNTON, MASS.

☞ Any variations from the regular size or shape of the above-named goods made from samples, to order. Orders by mail promptly filled.

SAMUEL LORING'S

PLYMOUTH TACK AND RIVET WORK

PLYMOUTH, MASS., manufacturer of

TACKS, BRADS, NAILS AND

RIVETS.

Swedes and Common Iron Tacks; Leathered, Carpet, Brush, Lace and Gimp Tacks; Finishing, Hungarian 2d, 2d and 3d Fine, Trunk, Clout, and Cigar Box Nails; Black and Tinned Trunk Nails; Zinc, Iron, Copper and Steel Shoe Nails; Brads and Patent Brads; Glaziers' Points, &c., &c., &c. **COPPER, BRASS AND IRON RIVETS,** of all kinds. Coopers' Rivets from 1d to 6d, in casks of 100 lbs. each. Hose, Belt and Shoe Rivets and Burrs. Oval and Countersunk Heads of extra lengths, made to order. SHIP AND BOILER RIVETS OF ALL SIZES AND LENGTHS.

AMERICAN TACK Co.

MANUFACTURERS OF

Copper, Swedes, and Iron Tacks,

BRUSH, LACE AND GIMP TACKS,

Leathered, Tinned, and Iron Carpet Tacks; Finishing, Black, and Tinned Trunk Nails; Hungarian and Cigar Box Nails;

COPPER and IRON BOAT NAILS;

ZINC, COPPER, STEEL, and IRON SHOE NAILS

2d and 3d FINE NAILS;

Bright and Tinned Roofing Nails,

BRADS, PATENT BRADS, &c,

Factory, Fairhaven, Mass.

Salesroom, 117 Chambers Street, NEW YORK

N. B.—Any variation from the regular size or shape of the above named goods cut from sample to order.

COBB & DREW,

Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets; Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk, Clout and Cigar Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY,

GEO. C. GRUNDY,

Successor to **Disosway & Grundy,**

No. 12 Platt St., NEW YORK

Also, Agent for the Philadelphia Carriage and Tire Bolts

Established in 1812.

HOBART'S TACKS.

Manufactured by

Dunbar, Hobart & Whidden,

Office and Salesroom,

35 Chambers Street, N. Y.

Factory, SOUTH ABINGTON, MASS.

Manufacturers of

American, Swedes and Copper Tacks, Tinned, Leathered and Large Head Tacks, Finishing Nails, Black and Tinned Trunk Nails, Miners', Gimp, Lace and Brush Tacks, Hungarian, Chair, Cigar Box and Barrel Nails, Glaziers' Points, Iron, Steel, Copper, Zinc and Brass Shoe Nails, **HEEL and TOE PLATES, STEEL SHANKS, and FANCY HEAD NAILS, SILVER or JAPANNED LINING and SADDLE NAILS,**

A full assortment always on hand at salesrooms, for immediate delivery if required.

Odd and irregular sizes made to order or cut from sample at short notice. Send for Price List.

WRIGHT'S

Double Acting,

BUCKET - PLUNGER

STEAM PUMPS.

ALWAYS RELIABLE

VALLEY MACHINE CO., Easthampton, Mass.

MORE THAN 400 DIFFERENT STYLES.

LIFT AND FORCE PUMPS,

HYDRAULIC RAMS, &c.

☞ Send for Circular and Prices. ☜

RUMSEY & CO.,

Seneca Falls, N.Y., U. S. A.

Woodward Steam Pump Mfg. Co.

Steam Pump and Fire Engine,

—AND—

Steam, Water and Gas Fitting of all Kinds.

Also Wholesale and Retail dealers in WROUGHT IRON PIPE, BOILER TUBES, etc.

Woodward Building, Nos. 76 & 78 Centre St., corner Worth Street, **NEW YORK.**

GEO. M. WOODWARD, Pres't.

R. M. GREEN & CO.,

Hardware Commission Merchants and Manufacturers' Agents.

100 CHAMBERS STREET, NEW YORK.

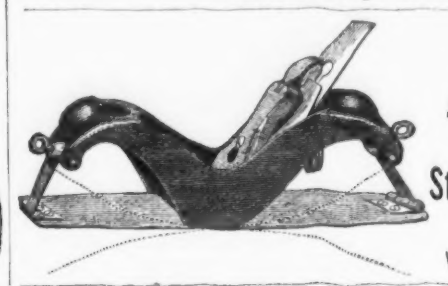
All kinds of Handles for export, such as Axe, Pick, Hay Fork, Shovel and Planters. Turning of all kinds in Ash and Hickory furnished to order.

CROOKE & CO.,

MANUFACTURERS OF

Wrought Iron, Copper & Tipped Butts,

163 Mulberry Street, New York.



☞ Over 40,000 Sold.

BAILEY'S PATENT

Adjustable Planes.

Manufactured by the

Stanley Rule & Level Co.,

NEW BRITAIN, CONN.

Warehouse, 55 Chambers St., New York.

Special Notices.

Hardware Salesmen Wanted.

A LARGE MANUFACTURING AND JOBBING Hardware House, in New York, wants to engage four well posted, *first-class Hardware Salesmen*, to travel and sell goods in the four following sections of the country, viz: Wisconsin and Minnesota, Southern and Western Indiana and Southern Illinois, Missouri and Western Iowa, Canada and the Provinces. Persons without experience or trade in either of the above four parts need not apply; as parties who are engaged will risk their time and traveling expenses. Address with reference I. G., Box 2127, N. Y. P. O.

HORSE SHOE IRON

Of superior quality,

MANUFACTURED BY

NEW HAVEN

Rolling Mill Co.

Wanted

At the Capouse Works, Scranton City, Penn., a man to run a Heating Furnace and Trip Hammer on Bar Iron or Drafts, as may be desired.

Address, *P. CARTER, Providence, Penn.*

R. T. HAZELL, AUCTIONEER.

By R. T. Hazell & Co.,

Store No. 118 Chambers Street,

Our REGULAR SALES of HARDWARE, CUTLERY, FANCY GOODS, &c., will be held on TUESDAYS and FRIDAYS throughout the season.

CASH ADVANCES made on CONSIGNMENTS without additional charge.

Charles Bliven, Prest. Edward B. Mead, Treas.
J. T. Hart, Vice Prest. Columbus Minor, Secy.

Office of the

HART, BLIVEN & MEAD MFG. CO.,

Manufacturers, Importers and Dealers in

General Hardware,

18 & 20 Cliff and 243 & 245 Pearl Sts.

Works at Kensington, Conn.

P. O. Box, 2331, N. Y.

NEW YORK, January 1st, 1873.

At a special meeting of the Stockholders of **The Hart Manufacturing Company** it was voted to have the **Name of the Corporation Changed;** and, subsequently, on the application to the Superior Court, at Hartford, Conn., the name was changed to **The Hart, Bliven & Mead Manufacturing Co.,** to take effect this day.

The business will be continued as usual, without any change of Officers or responsibility, but with renewed energy and increased production of New Articles.

We shall soon issue two new Catalogues, as follows:

FIRST.—One containing only articles *actually* made by us at our several factories.

SECOND.—One containing not only the articles we make, but all articles of American, English and German Hardware usually sold.

These will be the most elaborately Illustrated, Complete and Useful Catalogues yet issued for the use of Hardware Dealers. In consequence of the heavy expense attending the publication, we deem it proper to state now that we shall distribute them only as follows: One copy of the first issue will be sent, free of charge, to each Hardware Jobbing Firm, with first goods ordered after the same is ready. One copy of the complete Catalogue will be sent, free of charge, to each Hardware Dealer with first goods ordered after the book is received from the publishers. All extra copies of the complete Catalogue will be charged for $5·00 per copy, when sent by mail, or $4·50 per copy when sent otherwise.

In this first Catalogue referred to there will be many changes in List Prices, from which discounts will be made from time to time, as the cost of production and market values dictate.

All orders for goods of our own manufacture after this date will be executed at our *new* list prices and discounts. We solicit orders and ask the confidence and indulgence of our patrons until we can place the Catalogue and Discount Sheets in their hands.

Respectfully, yours,

The Hart, Bliven & Mead Mfg. Co.

Special Notices.

Wanted

A First-Class Guide Mill Roller.

Extra chance for a reliable, steady man who is master of his work.

Address "Rolling Mill,"
Office of *The Iron Age*, 80 Beekman St., N. Y.

Wanted

By a gentleman of 25 years' experience, a position as a Mill and Forge Manager. Have had 4 mills to superintend: merchant mill, 18 inch train, rails, steel, heads and plating bars for edge tools manufacture, and all other kinds of merchant iron; a boiler plate mill and sheets; guide iron of all descriptions, hoop and strips. Have had a great experience in the manufacture of steel, iron for springs, and melting steel for cast steel. Was in last situation 5 years. Undeniable reference for 30 years will be produced. Address A, 152, Ansonia P. O., Conn.

Wanted.

By a practical man, 30 years' experience, a situation as a Charcoal Lumper, working with scraps for wire and other different purposes. Would have no objection to turn his hand to work at the forge rolls or to heat for a 12 or 16 inch rolling mill. Good references will be produced. Address B. C. D.,
Post Office, Ansonia, Conn

ALWAYSCOOL Stove Lid Lifter.

Ventilated Handle Manufactured by
G. B. WAIBRIDGE, 55 Chambers St., N. Y.

Agencies Wanted.

One or two American Manufacturers of Hardware can be ably represented in all sections of the United States, by a house engaged many years in, and at present doing business with, the leading Hardware Merchants in the principal cities throughout the country. Address AGENT, 289 Broadway, N. Y.

SLEIGH BELLS.

We have the following of Veazy & White's Sleigh Bells, which we offer at 30 per cent. discount from their list:

25 Straps each.....

	No. 179	180	186	191
	$1·25	$1·50	$1·98	$2·06

50 Straps each, Chase's Patent.

	No. 403	404	405	408	409
	$1·75	$1·80	$2·00	$2·10	$2·30

25 Neck Strap of 12, No. 3 Bell ..... $1·30
25 " " " 12, No. 2 Bell ..... 1·10

Order Quick! Discount 30 per cent.

GRAHAM & HAINES,

88 Chambers Street, N. Y.

HARDWARE AGENCY

Wanted by one of the oldest and most successful Hardware Houses in this city, and at present doing an active business with most of the principal merchants in the United States, and who keep the business constantly before dealers by the aid of efficient travelers, but as the variety of goods represented is limited, would be willing to take the *Agency* of one or more leading Manufactories of Hardware not now satisfactorily represented, or who desire to extend their business. HARDWARE, 289 Broadway, N. Y.

Damaged Steel.

Wm. Jessop & Sons,

134 North Street, Boston,

Have for sale several hundred tons of Steel damaged in the late fire. Pay us a visit, Prices to suit all.

OFFICE OF THE NATIONAL ASSOCIATION OF IRON MANUFACTURERS,
341 Walnut Street, PHILADELPHIA.

A stated meeting of

The National Association of Iron Manufacturers

Will be held at the **Continental Hotel, Philadelphia,** at 11 o'clock, a. m., of *Wednesday, January 8th, 1873.* All members of the Association are requested to be present. Proprietors of Rolling Mills throughout the country, not yet members, are cordially invited to attend.

THOS. DUNLAP, Secretary.

NOTICE.—THE FIRM OF WILLIAM & HARVEY ROWLAND, Manufacturers of Springs and Steel, will be continued as heretofore, the heirs of WM. ROWLAND representing the interest of Wm. Rowland, deceased, as provided for by articles of agreement made January 1, 1868, providing that in case of death of either of the partners prior to January 1, 1878, the copartnership should continue for ten years from the first day of January, 1868, with a further provision for its extension for one year, namely, January 1, 1879.

The interest subsequently given to EDWARD ROWLAND, son of William Rowland, and to WILLIAM ROWLAND, son of Harvey Rowland, will remain as heretofore.

HARVEY ROWLAND,
Surviving Partner,
No. 948 Beach Street, Philadelphia.

December 27, 1872.

BUSINESS ITEMS.

NEW JERSEY.

The Franklin Iron Company, Franklin, are building a furnace of 23 ft. boshes, 67 ft. stack. They have on their ground an old furnace, built in revolutionary times, and now used as a lime kiln.

The new shops of the Pennsylvania Central Railroad Company, to be built between the Hackensack and Passaic rivers, near Jersey City, will be, when completed, the largest structures of the kind in the world. Some idea of their immense size may be obtained from the statement that one of the foundation walls is a mile in length.

Juan G. Ribon has recently erected a new machine shop at Jersey City. The principal shop is 100x50 feet, and is filled with the best of machinery, adapted to the work of making dummy locomotive engines, horizontal and vertical steam engines, machinists' tools of various kinds, stills, and a general range of iron and copper work. The buildings are located near the North River and Jersey Railroad, giving the best of facilities for transportation.

PENNSYLVANIA.

The puddlers at the Lackawanna Iron and Coal Company's mills, in Scranton, resumed work on the 10th ult. They had been on a strike for several months, and went to work at 75 cents less than they came out on, and 50 cents less per ton than the company offered them at the time they suspended.

The Thomas Iron Company, in the Lehigh Valley, is spreading its branches over different and distant States. Already it owns thousands of acres of coal and ore lands in New York, Pennsylvania and Alabama, and runs furnaces in all three States. Its resources in iron ore and coal are to-day inexhaustible by its furnaces, and will supply materials for years to come. At Hokendaqua the work of improvement and change is constantly going on, although the stockholders receive large dividends.

Everson, Graff & Macrum's new rolling mill at Pittsburgh is nearly ready to commence operations. The foundations are completed and the machinery is now in position. The firm will be ready to commence operations by the middle of the month. They have just opened a new coal bank, a 9 foot vein of a superior quality, at Fountain Mills, Westmoreland county. Their blast furnace on the same property is well under way, and it will be 12 feet boshes and 60 feet stack.

Veach, Windfield & Co., West Middlesex, Mercer county, are now putting down the foundation for the machinery for their new mill. Lewis & Rossiter, of Pittsburgh, have furnished all the drawings and plans, and the machinery is now in the course of construction at their works.

Furnace No. 2 of the Westerman Iron Company, and the furnace of the Jackson Iron Company, Sharon, have blown out for repairs.

The board of directors of the Co-operative Iron and Steel Works, of Danville, have declared an annual dividend of 10 per cent. The works have been in operation one year, and this is the first dividend.

MASSACHUSETTS.

There are two large establishments in Spencer for the manufacture of wire. At that of J. R. & J. E. Prouty, about four tons of wire are produced weekly. Here 25 persons find employment. The firm have lately begun to operate a new mill, where the wire is first drawn from the rods. It is then taken to the other mills, and drawn down to different sizes.

OHIO.

The McGowan Pump Co., Cincinnati, with a capital stock of $100,000, divided into shares of $100 each, have filed articles of incorporation with the county recorder. The papers are signed by T. J. McGowan, S. N. Poage, R. Simpson, H. Tilden and W. H. Gould.

Ironton is to have a new stone coal furnace. Mr. George Willard is the projector, and the proposition embraces the purchase of Ætna and Vesuvius furnaces with 15,000 to 16,000 acres of land, for $300,000, and the building of a new stone coal furnace at or near Ironton, and possibly the addition of other industries than the making of pig iron alone. The stock is $700,000, all of which is taken up.

A new rolling mill is to be erected at Martin's Ferry.

The Salem Stove Works, J. Woodruff & Sons, Salem, employ 35 hands, melt about 500 tons of metal, and turn out annually about 5000 stoves.

The Burgess Steel and Iron Works, at Portsmouth, are building a new furnace, and have also put in a large and powerful doctor. They are also building a group of furnaces for the manufacture of cast steel, and expect to be ready to turn out this new article of manufacture about the 1st of January, at which time they will employ about 200 men.

A citizen of Springfield has completed a contrivance to be used at railroad crossings to signal the approach of trains. It consists of two parts, one of which is attached to an upright post bearing a flag and bell, the other is designed to be fixed to the rails at any distance desired from the crossing. When the train strikes the latter the bell rings and the flag waves at the crossing simultaneously. The two parts are connected with an iron rod.

KENTUCKY.

A new rolling mill at Paducah has commenced operations. The workmen are chiefly Welsh. When running full the mill will employ one hundred hands, use from twelve hundred to fifteen bushels of coal per day, and turn out eighteen or twenty tons of iron.

A rail mill is being constructed in Louisville at a cost of half a million dollars, for the manufacture of rails by a new system, which does away with manual labor. Before the iron comes out a perfect rail it is passed through thirteen sets of rolls, and is turned over five times for side rolling.

The Iron Age.

New York, Thursday, January 2, 1873.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . . Editor.
JOHN S. KING . . . . Business Manager.

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Briefly Personal.

With this issue we present our readers *The Iron Age* in a new form; enlarged, for the fifth time within two years, but so changed in shape as to make it more convenient to our readers.

Our reasons for making this change are numerous and satisfactory. In its old form *The Iron Age* was too large to be filed, in too many parts to be kept always at hand for reference, and too large to bind. During the past two years, we have received repeated requests from subscribers and advertisers to change our form, and in doing so we only conform to what we believe to be the wish of a great majority of our friends and patrons. We have, also, reasons of our own for making the change. In our opinion, the day of great "blanket sheets," of which *The Iron Age* has long been the most conspicuous example in this or any country, is past, and a cultivated public taste demands that newspapers of convenient size shall take their place, as books of convenient size and shape have taken the place, on our library shelves, of the unwieldy folios and ponderous quartos of the last century. Again, our experience has taught us that our space must be increased from time to time to meet the requirements of advertising; and in our present form we can multiply our pages as circumstances may require, without inconvenience to our readers. We have, therefore, every reason to believe that the change will be as gratifying to both subscribers and advertisers as it is satisfactory to us.

Of our plans for the further improvement of *The Iron Age* we have but little to say. To those who know the journal, and who have found it useful in their business, we need make no promises; to those who see it now for the first time, its appearance, and the character of its contents, are better guaranties than anything we might say in our own behalf.

To improve *The Iron Age* wherever and whenever improvement was possible; to make its trade reports and prices current full, comprehensive and invariably accurate; to discuss the most important practical questions of the day honestly and intelligently; to represent in the fullest sense the iron, hardware and metal trades and the great metal working industries of the country, and to make our columns interesting, as well as valuable, to our readers, has been the constant aim of its conductors; and it would be an affectation of modesty not to see in its expanding circulation, its great and increasing influence, and its extensive advertising patronage, the best evidences that our efforts have been fully appreciated by the public. We need only say, therefore, that we shall follow in the future the policy that has proved so successful in the past, and that, with better facilities at our command than ever before, we shall regard success only as an incentive to greater efforts to retain for *The Iron Age*, in its sphere of usefulness, that pre-eminence which it has already gained.

Iron and Hardware in 1872—The Outlook.

The past year has been an eventful one in nearly all branches of the metal trades, but more especially in iron, of which we shall speak first. During 1871 the price of No. 1 pig varied between $30 and $37 per ton, it having gradually advanced to the last named figure during the summer; but late in the season, and without apparent reason, some of the largest makers united in putting the price down to $36, at which it opened in 1872. But it soon became evident to those well acquainted with the market that the tendency of prices was upward, and while we can but regret that the advance was so great, it is gratifying to know that our predictions have been fully realized in all the varying phases of the market. Dear iron can only be regarded as a misfortune, however much high prices may profit the producers; and the only compensating advantage is found in the fact that the higher prices go the more liberal are the inducements held out to capitalists to invest in its manufacture. In a country like this, economy in the consumption of iron can only be effected at the expense of our material prosperity.

That iron should advance during 1872 was, as we clearly demonstrated early in year, the inevitable result of the peculiar condition of the trade; the only cause for regret being that speculation carried the price altogether beyond the highest point at which it was possible, under the most favorable circumstances, to maintain it. Consumption had overtaken production, there was no stock in the market, a great and growing demand for iron was reported in all countries, Great Britain was not in a position to materially increase her production, and the requirements of the American market exceeded the total of our production and importation. An iron famine was threatened, and prices advanced rapidly; but the upward movement was taken undue advantage of by speculators, and later by makers; and, between the two, prices were advanced to a point so high as to place an effectual check upon consumption. At $55 per ton for Foundry No. 1 the maximum was reached, and there makers seemed determined to keep it; but the demand was small, and with accumulating stocks producers were forced to make concessions, prices declined, buyers would only order for their immediate necessities upon a falling market, and the close of the year found the trade unsettled and prices weak. The reaction from extreme buoyancy has been more sudden than was expected, but had the decline been still more marked, it would have been greatly to the advantage of the trade.

The beginning of 1873 finds makers with some accumulation of stocks in the East and considerable in the West, and a market unsettled and heavy, with the views of consumers still very much below those of producers. In this market, No. 1 pig is generally held at $45, but few buyers are willing to offer more than $40, which large consumers believe to be the highest price at which it is safe to buy any considerable quantities at the present time. But both parties are firm in their views, and, from present appearances, it is not unlikely that makers and buyers will each have to make concessions before any extensive engagements are made. As usual, the spring contracts will give strength to the market, and should the price start low enough—say $40 or $42—the tendency of prices will probably again be upward, and the spring engagements be the basis of at least a moderate activity throughout the year. On the other hand, should the present offering price be sustained two or three months, or the decline be so slight as not to satisfy buyers, it is to be feared that the market will be unsettled and heavy throughout the year.

It cannot be very long, however, before the evils growing out of the high prices of iron will correct themselves. During the past year there has been a very considerable increase of production throughout the country. Many old and abandoned furnaces have been relined and put in blast; many furnaces have been enlarged, and many new ones built. It is estimated that fifty new furnaces have been built or building during the past year, with an aggregate capacity of nearly half a million tons; and many new enterprises are contemplated which will undoubtedly be carried into effect during the year upon which we now enter. What has been the actual production of American pig for 1872 cannot, as yet, be estimated with any accuracy, but we are satisfied that it will not be far from 2,400,000 tons, although, owing to the high prices demanded for ores in the West, many large furnaces have been run upon short supplies, and some blown out. Again, the accumulation of stock, which makers were unwilling to dispose of below the highest prices, has been so considerable as to cause a partial suspension in some districts; and for these reasons the productive capacity of the country has not been fully utilized, although it may be said that, as the rule, the furnaces have made all the iron they could during the greater part of the year. But whether our estimate of the production of the year is correct or not, the increase has been sufficient, with the falling off in the consumptive demand, to insure a much better supply at the beginning of the year than was generally expected, and should production continue to increase as rapidly in the next two years as in that just ended, it will be impossible for speculation to push the price so high as to force an economy of consumption great enough to place a serious check upon the material progress of the country. Nothing is more important than that iron, so generally superseding all other materials of construction, and indispensable for so many important uses, should be in abundant supply, and as cheap as it can be made with profit to producers; and we think the time is not far distant when production will have so increased that all reasonable demands of the trade will be promptly met by the makers at reasonable prices. We have done all in our power to encourage the liberal investment of capital in furnaces and mining operations, but although the condition of trade has materially changed since we first pointed out the advantages of such investments, we have, as yet, no reason to counsel caution other than that which should always be observed in choosing sites for furnaces, and in insuring the economical and skillful management of mining properties.

To the advance in iron early in the year, the prices of hardware responded more or less promptly. This was especially noticeable in a great many articles which had before been selling at very low prices, owing to the active and, in some instances, unfriendly competition of manufacturers, who, since the revision of their discount lists, have conducted business upon a very much more satisfactory and profitable basis than for a long time previously. The advances in the prices of hardware goods have not been great enough to perceptibly diminish the consumptive demand, and, as a whole, the year has been more prosperous than, owing to the distracting excitements of the Presidential canvass, was generally expected. Elsewhere in this issue will be found our customary annual reviews of the iron and hardware trades, giving the details of all important trade movements and fluctuations in prices since January 1st, 1872, to which we invite attention. The market is just now without important feature, and there is no reason to suppose that the trade will be affected by any unusual conditions during 1873. So far as can now be seen, the outlook is favorable.

The British Iron Year.

The year 1872 will long be remembered as the most eventful in the history of the British iron trades, and although our readers have been kept well informed on the changing phases of those trades throughout the United Kingdom, a brief review of what has taken place during the past twelve months will, we think, be found of more than ordinary interest. The first indications of the extraordinary advance in prices which has occurred during the past two years, were noticed in March, 1871, when the increased demand for iron which followed the close of the Continental war gave strength and tone to a market previously weak and heavy. In the following month the mine owners began to advance the cost of coal, and from that time the price of fuel continued steadily to advance, though with some fluctuations, until the maximum price was reached in July last. Meanwhile iron rose in value with surprising rapidity, and attained its highest figures toward the close of the same month. The following table will show the difference in prices of certain forms of English and Welsh iron for the last weeks of July, 1871, and July, 1872.

	July, 1871.	July, 1872.
Pig No. 1 in Wales	75/ @ 85/	140/ @ 150/
Refined Metal in Wales	80/ @ 100/	140/ @ 160/
Bars, Common "	135/ @ 140/	240/
Railway Bars "	140/	150/ @ 240/
Welsh Bars in London	152/6	255/ @ 260/
Nail Rods "	150/ @ 155/	260/ @ 265/
Stafford Bars "	160/ @ 182/6	330/ @ 340/

The following is a comparison of the prices of Scotch pig, free on board in Clyde:

	July 12, 1871.	July 12, 1872.
Gartsherrie	65/6	141/
Coltness	66/	140/
Summerlee	63/	141/
Langloan	63/	141/6
Calder	61/6	141/6

The effect of the advance in pig and rolled iron upon the various forms of manufactured iron and hardware goods, will be seen from the following interesting comparison of discounts in September, 1871, and June, 1872. The figures quoted, unless otherwise specified, refer to the discounts from the price lists, the percentage of increase being calculated upon the net prices:

	Sept. 1871.	June, 1872.	Advc. ℔ c.
Iron gas tube	70 per cent.	35 per cent.	117
Brass-cased tubes	57½ "	42½ "	38
Tinned hollow-ware	55 "	40 "	33
Enameled "	32½ "	22½ "	15
Iron wood screws	60 "	40 "	50
Light edge tools	45 "	37½ "	14
Galvanized buckets	8/ ℔ doz.	11/4 ℔ doz.	42
Japanned goods	27½ per cent.	5 per cent.	31
Chains	18/3 ℔ cwt.	28/4 ℔ cwt.	55
Anvils	26/ "	33/ "	26
Steel toys, best	30 per cent.	25 per cent.	7
" 2d quality	45 "	35 "	18
Best spades & sh'v'ls	42½ "	25 "	30
Wrought nails	—	—	50
Cut nails	9/6 ℔ cwt.	19/ ℔ cwt.	95
Malleable cast iron nails	17/ "	22/ "	29
Cast iron wall and lath nails	8/ "	11/6 "	44
Sad irons	8/ "	11/6 "	44
Improved chest handles	77½ per cent.	70 per cent.	33
Bellows, bastard	65 "	55 "	29
Ex. nailed "	60 "	50 "	25
Bristol "	55 "	45 "	22
Brass foundry	50 "	35 "	30
Frying pans	70 "	50 "	67
Cut tacks	80 "	70 "	50
Iron locks	—	—	25
Wrought hinges	62½ "	50 "	33
Shoe tips	—	—	30
Currycombs	—	—	25
Fire irons	—	—	25
Cast iron fenders	—	—	25
Box irons	57½ per cent.	50 per cent.	18
Iron bedsteads	—	—	30
Planes	50 per cent.	40 per cent.	30
Paraffine lamps	—	—	10
Gas fittings	27½ "	15 ℔ c. about	17
Washers	75 "	50 "	100
Brass loco. tubes	8¼d. ℔ lb.	1 0¼ ℔ lb.	44
Brass tubes	10½d. "	1/2 "	38
Brass wire	8d. "	11½d. "	44
Copper wire	10½d. "	1/3 "	43

From this it will be seen that the average advance on hardware has not been far short of 50 per cent. in the nine months.

The excitement which developed with the advance in prices, was almost unparalleled in the history of the trade. A great and growing demand was experienced from all countries, an active speculation began, and the productive power of the United Kingdom was taxed to its utmost. But the great increase of activity was not attendde with a proportionate increase of profit to makers. The coal operators combined to charge for coal the very highest prices obtainable, and the production, though as great as the miners would permit, was far below the requirements of the country. Though coal had advanced from 19/ in March, 1871, to 30/ in July, 1872, and coke in proportion, many mills and furnaces were unable to procure sufficient supplies of fuel. The same was true of ores—the principal iron masters being driven by their immediate and prospective necessities to organize companies for the working of foreign mines, especially in Spain, and for the importation of ores to supplement the insufficient production of the British mines which, as early as April, 1872, had been contracted for to the end of 1873. A still more serious obstacle to the prosperity of the iron masters, however, was the rapid and sustained advance of wages in all departments of iron working—the men taking advantage of the necessities of the masters, and forcing them to choose between a suspension of operations and the granting of concessions which at no other time, and under no other conditions, would have been possible. The artificial stimulus imparted to trade was not, however, permanent in its effects. When the panic was at its hight speculators were shrewd enough to see that prices had reached their limit, and to unload in time to save themselves the misfortune of holding iron on a falling market. Then it suddenly dawned upon the large consumers that, to buy with the market in such a condition, was a very risky business. Foreign orders were falling off, stocks were accumulating and consumption decreasing, and as they limited their purchases to immediate requirements, the price began to decline. This made buyers the more cautious and sellers the more anxious, and as high prices had averted the danger, of an iron famine, large consumers declined giving orders except at prices considerably below the market quotations.

Since August 1st the tendency of prices has been downward until about two weeks ago, when a reaction took place and the trade began to recover something of its former strength. Consumers are again appearing in the market, and makers, lately ready to make any reasonable concessions to the views of buyers, are hesitating to accept orders on the terms offered, in the hope that a pressure of demand may force prices upward. The condition of the trade, though improving, is still far from satisfactory; and while coal and ores remain so scarce and dear, and wages so high, there will be but little profit in iron making, even at considerably better prices than are now obtainable. The season of extraordinary activity which continued up to August was, all things considered, but a poor preparation for the season of extreme depression which followed, and the beginning of 1873 finds the iron trade in a condition far from satisfactory to those engaged in making it.

As to the future, it is, we think, not difficult to speak with confidence. As we have frequently said in these columns, we believe that England has passed the zenith of her greatness as an iron-producing country, and that she must steadily lose ground against the growing competition of other countries, especially the United States. The British coal supply, though in no danger of immediately failing, is insufficient to meet the demands of the country during a season of great manufacturing prosperity; the supply of ores of good quality is definitely limited; and manufacturing of any kind, especially iron making, can never again be conducted so cheaply in England as to retain for Great Britain a monopoly of the production of goods which other nations have facilities for producing. The "cheap labor" on which the British iron master has relied for so many years, is a thing of the past, and England is beginning to discover that she can no longer supply the increasing demands of the world's iron markets. There is no reason to look for a sudden collapse of her great manufacturing prosperity; but her monopoly of the export trade in iron is slipping from her grasp, and with high wages and imported coals and ores, she can never regain to the position from which she is receding.

The Vienna Exhibition.

Those who contemplate visiting Vienna during the great International Exhibition which opens in May, will be interested to learn that they can do so for what it would cost them to make a summer trip of the watering places in what is considered "good style." Indeed, we believe that the trip to Vienna would be the more economical pastime of the two, and there can be no question but that it would be a great deal the more satisfactory. We understand that a party of teachers, who propose to pass the summer vacation in this pleasant and profitable manner, have made arrangements by which they will travel in a special steamship, touching at Scotland, England, Belgium, the Rhine Provinces and Bavaria, and return by way of Switzerland and Paris, sailing from Havre, at a total estimated expense for the round trip of $400, gold, each. Those who desire to go on their own account, rather than avail themselves of the special excursion facilities which will doubtless be offered, can do so most pleasantly by way of Liverpool, or Havre, and Paris, from which city, Vienna can be reached in thirty-six hours by rail.

How liberally American industry will be represented is still a matter of uncertainty. There has been an effort in some quarters to discourage inventors from sending goods for exhibition, by circulating rumors to the effect that the Austrian patent laws afforded no protection to foreign inventors, and that all inventions exhibited would be promptly pirated. To prevent any such injustice, the Austrian government grants entire protection to all foreign inventions, and permits inventors to take out regular letters patent upon the payment of the very moderate fee of eleven dollars. Whether it is worth while to send articles for exhibition, is a question which our inventors and manufacturers are fully competent to decide, without any advice from the newspaper press.

Mr. Thomas McSpedon, Fire Marshal of the Metropolitan District, takes very strong grounds with regard to the dangers to be apprehended from superheated steam in pipes, especially when the latter are in contact with wood work—insisting that if there is sufficient steam remaining in the pipes after the fire has been banked, it is liable to turn into gas and make the pipes red hot; and, further, that this result is liable to occur even when there is not fire enough to make steam in the boiler. Mr. McSpedon says: "A pound of steam will occupy "2600 times the space of a pound of water, "and less fire will heat that 2600 volumes "of steam than the pound of water. That "this superheated steam heats the pipes to "a red heat in many instances, we have "abundant evidences in this office to prove, "and many fires occur in every large city "from this cause." We have no doubt that fires often originate from steam pipes, but not under the conditions specified by

the Fire Marshal—the superheating of steam in pipes to a point at which the latter become red hot being an impossibility, unless the fires are hot and the boiler dry. It is well enough for the Marshal to do all in his power to impress upon the public mind the importance of looking after steam pipes, but he would do well to avoid discussing questions specifically which it is evident he knows little or nothing about.

The officers composing the Ordnance Bureau of the United States Army are just now very much exercised in mind on the subject of heavy ordnance. It was supposed that the experiences of the late war settled the question as to which pattern of gun possessed the greatest endurance and power, in favor of the Rodman; but the Ordnance Bureau now incline to the belief that the Rodman is a very inferior gun, and that until a better can be found the country is not safe. During the last session of Congress an appropriation of $270,000 was made to defray the cost of testing a variety of inventions, and the Board of Ordnance is to be entrusted with the pleasant duty of spending this money. Dr. W. E. Woodbridge's invention, constructed by winding wire around a tube, has met with great favor, but it will doubtless be a year or two before the question can be decided. The Krupp breech-loader is also one of the competitors, and brings with it a prestige gained by its success during the late siege of Paris.

Notwithstanding our enlargement, the pressure of matter upon our columns this week is so great that we are compelled to postpone until our next issue the publication of our annual review of the metal trades, including copper, iron, spelter and lead. It will be found of much statistical value, as well as interest, to dealers and consumers.

Scientific and Technical Notes.

An officer of the English army is accredited with a very important discovery, which is said to restore one of the "lost arts"—that of preserving everything from the destructive agencies of time. This he accomplishes by the application to the object to be preserved of a new transparent varnish to which he has given the Arabic name

ZOPISSA,

which is said to possess some very wonderful properties. According to the account given of it in the *Art Journal*, it is an excellent cement and glue; for it will unite porcelain, glass, and even building stone and iron with the firmest bond, while at the same time is available for gluing wood, and delicate enough to seal an envelope as though it were a mucilagenous gum. It is, also, an admirable covering for exposed surfaces. While applied with the facility of white lead or ochre and oil, it fills the pores and makes a surface so close that no water can soak through it. The finest China ware is not more impervious to moisture. Then, among its other remarkable qualities, is to be observed its insensibility to heat. It is one the poorest conductors of heat, and abestos is not more indestructible. Who knows but that Boston might have been spared its awful conflagration, had this simple substance covered the treacherous Mansard roofs, instead of brittle, scaling slate? This zopissa is, beside, an admirable varnish. Pumice stone, shellac and copal gum cannot produce a fairer lustre. The *Art Journal* believes that this is the substance with which the ancient Egyptians used to embalm their dead, and preserve their frescos and works of art and industry. The mummy cloths of Egypt taken from tombs where they have lain 3000 years are still compact and firm. While the frescoes of Angelo are becoming dim on the ceiling of the Sistine chapel at Rome, the mural paintings of Egypt, traced eight times as long ago, are as fresh as though the artist had just gone from his work. Travelers have been accustomed to attribute this permanency of color and fabric to the superb and dry climate of the rainless valley of the Nile. But this explanation is not adequate. Clothes taken from the ground where they have long been buried, piles driven years ago in the river bank, colors long exposed to moisture, retain their perfection still. Experiments have even been tried of subjecting the paintings of Egypt to the flame of a gas jet, but even the heat does not destroy their purity and strength. This power of building, weaving and painting for all time has seemed one of the secrets of the lost arts which our civilization might envy, but not initiate, and if zopissa possesses even a few of the qualities claimed for it, it may be of great practical value.

An improved apparatus for stopping railway trains, known as

THE SICKLES AIR-BRAKE,

is now attracting the attention of railway managers throughout the country. The great defect of the Westinghouse and other air and steam brakes is, that they do not apply themselves to a disconnected car, nor exert their power automatically in case of accident. In the Sickles brake it is proposed to overcome both these difficulties. In the Westinghouse apparatus, the air-pressure is used to apply the brake. Mr. Sickels, in his apparatus, uses a spring to apply the brake, and air-pressure to take it off. The apparatus is thus, in principle, substantially the same as the Westinghouse, with the exception of the spring: a Creamer spring is used on each car to apply the brake. The power of the spring is definitely known; and the pressure being limited by its power it is always known precisely what pressure is applied. The normal condition of the train is with all the brakes applied by action of the springs. If the engineer wishes to start the train, he lets on the air-pressure which detaches the springs and leaves the wheels free to move; the pressure is kept upon the pipes, and so long as this is done, the brakes are kept released. To apply the brakes a portion, or the whole, of the condensed air in the pipe is let off, and the action of the springs applies the brakes. If there be any defect in the connecting pipe the result cannot be serious, the only effect being that the train cannot be started; and the engineer must stop and repair the pipe, and reestablish the air-pressure before the wheels can run. In the Westinghouse apparatus the engineer has to find out defects by trying to stop, instead of start the train, and the knowledge may have to be obtained at fatal cost. Suppose, with the Sickels apparatus, that the train breaks in two; the break lets the air out of the pipes, the springs apply themselves to each car, and the entire train is brought to rest. Another and great advantage claimed by the inventor is that it places the train under control of the conductor as well as the engineer. By having a cock in each car leading to the air-pipe, the conductor—an accident having occurred to any portion of the train—can apply the brake from any car to the entire train; and this he can do as gradually or suddenly as he pleases by regulating the discharge of the air from the pipe. As the inventor states it, the excellencies of the Sickles apparatus may be thus summarized: it is impossible to slide the wheels; the brake is automatic in case of a break in the train; the conductor (or a brakeman or passenger, for that matter) can apply it, and the train cannot be run unless the apparatus is in order.

M. Calladon, an engineer well known from his connection with the Mont Cenis and St. Gothard tunnels, has lately made some important

IMPROVEMENTS IN AIR COMPRESSING MACHINERY.

In ordinary machines the heat developed by the compression of the air is very great, sufficient to cause a rapid deterioration in the mechanism, so that the air in practice is only compressed to a moderate extent; a pressure of four atmospheres being rarely exceeded. If care is taken to cool down the air sufficiently during its compression, this inconvenience ceases, and the machine would work better, and be capable of supplying air compressed to a much higher degree. It is in this respect particularly that M. Calladon has made his chief modification. He effects the cooling down of the air or gas during compression by the injection of cold water. This injection is effected either in the pump itself, on the compression side, and at a special point of the travel of the piston, or in the interior of the piston and piston-rod, which, in this case, are made hollow; in the latter mode the cooling of the piston and piston-rod is combined with the cooling of the casing outside the pump. The first system, that is the cooling of the pump on the inside, requires only a small quantity of cooling water. This water is thrown into the pump, either by a small auxiliary pump, by a head of water, or by the force exerted by the compressed air itself. The injection is made by a valve attached to a pipe which communicates with a series of holes pierced in each cover of the pump. The valve opens, only for an instant, at the moment when the compression commences. The water injected into the pump is expelled from it at each stroke of the piston. The small quantity of water required does not interfere with the speed of the piston, so that the amount of useful work done is scarcely diminished. But this system is not applicable when it is desired to compress gases soluble in water, and generally where it is desired to obtain the compressed fluids in a dry state. In the second system, the injection through the piston and piston-rod can be made either continuous or intermittent. The means employed for effecting this are various; the continuous injection, for example, can be arrived at by means of a tube penetrating the hollow piston-rod and communicating with a reservoir at a higher level. In the intermittent injection the rod itself can be employed to force in the water by its own motion.

Experiments are now being made at the central telegraph station, London, to test the practicability of

PASSING ELECTRIC CURRENTS IN OPPOSITE DIRECTIONS ON ONE WIRE,

which are said to have been, so far, entirely successful. The trials are being carried on between London and Southampton, and it is stated that as many as ninety messages have been transmitted in a single hour by this interesting and economical mode of working. This is fully twice the speed at which messages are transmitted by the ordinary mode of working, but it should be borne in mind that more than double the number of clerks at each end are required to keep pace with the instrument worked at so high a speed. The system is not exactly a new one, but has been successfully tried and, we believe, practically applied in this country for some time under the name of the Duplex system. The plan, it may be added, so far as can be seen at present, can hardly be extended to long lines—probably not to lines of greater length than from 150 to 200 miles; and for this reason, that the constantly varying electrical condition of the wires affects it materially.

Again, and for the eleven thousand and thirteenth time, we hear of a machine which develops

POWER FROM NOTHING.

This time it is a correspondent of the Pittsburgh *Commercial*, writing from this city, who has discovered the Protean inventor and his machine, which he describes as follows: "On a board across the bath tub stood a piece of mechanism shaped some like a steam engine of diminutive size, with gearing, eccentrics, ball and socket joints, and levers in sight, but all quite motionless. We took seats, and our enthusiastic host stepped up and turned a stop cock here and another there, and the machine was in motion—opened one a little more and more till the revolutions numbered eight hundred per minute. We could discover no means of producing power, and waited in blank astonishment for an explanation. It came, but the confusion of such terms in mechanics as "pulsators," "vibratory motion," "valvular action," "molecular agitation," "poised vacuum," and atmospheric pressure, made the explanation, as a whole, quite beyond our comprehension. We were asked to test the power of the machine, and with all our force applied wood and iron brakes to the gearing, and put our might on the levers, but could make only slight variation in the motion. "What is the power?" There was no fire, no warmth, no boiler, no cylinder, no chemicals, no gases, no magnet, no electricity, nothing to cause expansion or give power, except the atmosphere and about a gallon of cold water, direct from the hydrant and used over and over again. The machine could be picked up with one hand and carried in a market basket, but in force it measured, at a medium velocity, over two and a half horse power, which could be increased, as we were informed, beyond the power of the parts to withstand, by making one additional connection, provided for, but not used. There was a globular-shaped part which he termed the "pulsator," to which was attached a stopcock, supplying atmospheric air, and through which, at each revolution, there was alternate inhalation as demonstrated by holding a burning match near the orifice. In another part of cylindrical shape was a similar stopcock, through which was more violent inhalation, but less of exhalation. At the base of this part was a stopcock to which was attached a small rubber hose, connecting with the water supply. About a "thimble full" was used at each "pulsation," returning to the reservoir below. I could get no intelligent idea as to where the power was originated, what it was, nor how it could be applied. We disconnected parts of it, lifted it up, turned it over, tried to stop it, and watched every motion and the effects, at all rates of speed, and we can only say it is a very powerful engine in a wonderfully small space. It costs no more to run it than it does a healthy man to breathe. It ignores fuel, boiler, smoke, cylinder and flywheel. The "dead center" is an unknown point in its crank motion, for the power is applied at four or eight different points in a revolution, and could as easily be applied at double the number of points, so that the crank leverage would be almost technically constant. Our wonder working friend has two 10 horse-power, and two 20 horse-power motors, or engines, or "pulsators," nearly ready for practical uses, which he courteously invited us to call and see "about Christmas time," and I shall see them. I could only call it a breathing machine. It is evidently a discovery and not an invention, and we have only to allow that a small percentage of the discoverer's views are reasonably based and practical, to see this "pulsator" kicking steam engines and their boilers out of the way in a very large majority of cases, dodging into some little corner of space, and doing all their work without a farthing's expense in running, and attracting the attention and wonder and admiration of the whole scientific and practical world. The discoverer presumes to say he can place within a base of 6x8 feet a power greater than that of the engines of the Great Eastern, and have it under perfect control. He has contracted to sell the discovery for a million and a half of dollars."

HOW PAPER STOOD THE TEST OF FIRE IN BOSTON

is shown by the results of a number of interesting experiments lately made upon charred papers and documents, and the examination of books in safes which proved worthless in the great conflagration. It has been found that what paper makers call poor paper, *i. e.*, paper considerably "clayed," stood the best test. Parchment paper, used for bonds and legal documents, shrivelled up exceedingly, and the print blistered so that it could be read when the writing was illegible. So it was with the engraved work on notes. The gilding on the burnt and charred account books showed out as bright and clear as when the books were new, which brings up the question whether to introduce gilt-edge account books would not be well, on the ground that the gilt would stay the passage by fire to the pages within. Books crammed into a safe so that it was difficult to get them out, suffered considerably less than those that were set in loosely, and in some cases came out from safes in which everything else was worthless, so far preserved that the figures on the pages could be deciphered. With charred papers which could not be made transparent by any light whatever used, it was found, after the employment of vitriol, oxalic acid, chalk, glycerine, and other things, that anything that moistened to a certain stage—to which it was delicate work to get and not pass—made the lines, words and figures legible through a magnifying glass. It has been the almost universal experience that the lead pencil marks show out all right when ink marks cannot be distinguished.

Herr Kessler has analyzed samples of iron drawn from the converter from time to time, in order to show the

CHEMICAL PHENOMENA OF THE BESSEMER PROCESS,

with the following results:—

A.

	I.	II.	III.	IV.	V.	VI.
Graphite	2·41	0·75	0·02	0·02	0·01	0·01
Carbon	0·52	2·42	3·17	1·59	0·18	0·19
Silicium	2·41	1·26	0·27	0·03	0·01	0·16
Phosphorus	0·130	0·140	0·136	0·13	0·14	0·15
Sulphur	0·024	0·110	0·007	0·013	0·023	0·021
Manganese	2·45	0·70	0·19	0·12	0·05	0·22

B.

	I.	II.	III.	IV.	V.	VI.
Graphite	2·52	0·14	0·04	0·01	0·00	0·00
Carbon	1·06	3·65	3·83	3·47	0·29	0·45
Silicium	1·875	1·20	0·648	0·067	0·021	0·083
Phosphorus	0·100	0·105	0·086	0·087	0·109	0·104
Sulphur	0·372	0·069	0·061	0·077	0·113	0·080
Manganese	1·04	0·23	0·08	0·06	0·05	0·34

A I. shows the analysis of iron from the cupola; V., sample before the introduction of the spiegeleisen; VI., the finished metal. No details are given about the time, at which the samples from II. to IV. of the intermediary products was drawn off. B I. designates iron from the cupola; II., sample after four minutes; III., sample taken at the commencement of the second period; IV., iron drawn midway of the second period; V., before the introduction of the spiegeleisen; VI., the finished metal. It is remarkable that in the beginning of the process the quantity of carbon increases relatively, in consequence of the vivid oxidation of other substances; only after the silicium has disappeared the carbon begins to be oxidized. With regard to phosphorus, the conclusion may scarcely be drawn that its quantity decreases in the medium state of the process, whereas in the beginning it increases relatively by the oxidation of other elements, and finally absolutely by the reduction through the slag, so that the Bessemer metal really contains more phosphorus than the pig metal, which fact is also corroborated by other experiments. Now, however, are the results with regard to the deportment of the sulphur. The same shows at first a rapid decrease, while it increases during the medium state of the process until the spiegeleisen is introduced. This shows that part of the sulphur remains dissolved in the slag, and that, toward the end, it is reduced from the slag. Hence, we see that the sulphur is not converted into sulphurous acid, as was supposed, but an analogy may be drawn between the Bessemer process and puddling, inasmuch as the slags resulting from the latter process are never devoid of sulphur.

CAST STEEL BOILER PLATES.

Reiche, in a recently-published book, entitled "*Anlage und Beitreib der Dampfkessel*," says that the use of cast steel boiler plates has not given the satisfactory results anticipated. Since then cast steel works have the greatest interest to produce good results, but since they have replaced the boilers constructed with their own plates with wrought iron boilers, it may be considered certain that, for the present at least, cast steel plates possess properties which make them unfit for boilers. Hence, it would be desirable either not to use any such plates at all, or only in thicknesses exceeding those of wrought iron plates.

The *Deutsche Industrie-Zeitung* says, that on the Moscow-Vishni railroad they use a

NEW ALLOY FOR CRANKS,

which is also employed for the pillow-blocks of connecting rods, consisting of 90 parts of tin, 8 of antimony and 2 of copper. On another Russian Railroad they use an alloy of 78·5 parts tin, 11·5 antimony and 10 copper, with great success for casting pivots of every kind, for slide-valves, cross-heads, eccentrics, stuffing-boxes, etc. Recently, the Swiss Northeast Railway ordered that the axle-journals of their engines be cast in the following manner: To 10 parts molten copper, 10 parts of antimony and 80 parts of tin are to be added, and of this alloy bars are to be cast, which must be recast.

C. A. Martins, of Berlin, has been granted an English patent for the manufacture of

COMPOSITE PAVING BLOCKS,

made from the iron residuum resulting in the manufacture of analine oil from nitrobenzole. This residuum is mixed with asphalt, bitumen, pitch, tar or mixtures of those substances, from twenty to forty per cent. being sufficient to obtain a good result.

Messrs. Girard and Toulain propose to produce

WROUGHT IRON DIRECT FROM PIG

by conducting vapors of sodium or potassium, into fluid pig iron, and then by decomposing the alloy obtained by a current of air. F. Springmuhl says, that by adding sodium to molten iron in a Hessian crucible, and by lixiviating the product obtained with water, he obtained a very pure and soft iron, which, when recast, loses its porosity. This method of course only admits of application on a small scale, as sodium is too costly to be used for this purpose in any considerable quantities.

The Preston, (Eng.) *Chronicle* describes a

NEW METHOD OF LIGHTING GAS,

invented by Prof. Kleiskerfues, of Gottingen, as follows: The apparatus looks like a moderately sized globular inkstand of glass, surmounted by a tube of the same material, with a metallic top; and by screwing off the burner it can be very easily attached to any lamp, chandelier pipe, or ordinary gas jet. The base or globular portion is filled with a deep red colored liquid—a simple chemical mixture with no combustible properties, almost without smell, and so cheap that threepennyworth of it will serve one lamp for 12 months. Over this liquid, and within the glass tube, there is a plate of zinc, with a piece of graphite or gas coal, and between these and a thin coiled platinum wire, fixed over the cap of the general vessel, into which a gas burner is inserted, galvanic communication is obtained. Ignition is effected in the following way: A pipe, to be screwed to that up which the ordinary gas supply flows, runs through the base of the vessel to about the center of the surmounting tube; pressure brought to bear upon the gas in this pipe causes, by small collateral openings, a simultaneous depression upon the chemical solution which occupies a lower level in two side tubes; the gas occupies the vacuum caused by the displaced liquid, and then ascends to a chamber in connection with the burner, while the displaced liquid is pressed into two side tubes effecting contact with the zinc and graphite generating galvanic activity, which is communicated to the platinum wire, and exciting the catalytic power of the wire, which, when exposed to the ascending jet of gas, results in immediate, almost instantaneous, ignition. The mechanism is of the simplest construction, and can be applied to any kind or number of gas pipes, either remote from or proximate to the works, to street as well as to office or shop lamps, and the light can be extinguised as quickly as it can be ignited. In describing a recent trial of the apparatus at Preston, the *Chronicle* says: The apparatus was fixed in one of the rooms in connection with the gas works, and here the different experiments were made and explained. The first trial was on a number of burners running along the room, from which, on the mere working of a small regulator and the heat produced on the platinum wire, the jets were instantly and simultaneously lighted. With the same success several gas burners in different offices were lighted and extinguished. Afterward a large chandelier, containing about 50 lights, was illumined as if by magic, the effect being beautiful and surprising. On the intimation of Mr. Booth, two lamps fitted up in the yard of the gasworks were ordered to be lighted, and no sooner had the word of command been given than a flame was seen to be burning in each. This light—produced without any one going near the lamps—was as easily and quickly extinguished as reproduced. Several lamps, fixed to nearly the top of the ceiling, a hight of 30 feet, were ignited with the same facility—now all at once, now one after the other, just as the wish was expressed. The experiments were continued for about an hour and a half, and there was not a single hitch during the whole time.

A Large Forging.—We received this week, through the courtesy of Mr. George B. Stetson agent for Messrs. Lazell, Perkins & Co., of Bridgewater, Mass., a handsome photograph of the two largest wrought iron paddle shafts in the world, as they appeared on four locomotive express cars, ready for shipment to their destination at San Francisco, Cal. These shafts, weighing 37 and 39 tons, respectively, were manufactured by the above mentioned firm for the steamers Japan and China, owned by the Pacific Mail Steamship Co., and were transported from the works August 29th, 1872, a distance of 3625 miles by rail, to San Francisco, without change of cars, in twenty days. Some idea of the power required to produce such forgings may be had, when we mention the fact that the largest hammer in this country, eleven tons weight by ten feet stroke, was used in their construction, and the cranes by which they were manipulated are capable of sustaining ninety tons.

By a notice published in another column, it will be seen that the death of Mr. William Rowland, senior member of the firm of William & Harvey Rowland, Philadelphia, makes no change in the style or business of that well-known house—an agreement having been made in 1868, that in the event of the death of either of the partners before January 1st, 1878, the house should continue without change until 1879.

BUSINESS ITEMS.

NEW YORK.

The Union Iron Company's works, Buffalo, comprise one large rolling mill and three blast furnaces, and are owned and operated by a joint stock company, of which A. Pardee is president, G. R. Wilson, vice-president, and George Beals, secretary and treasurer. Their specialty is the manufacture of wrought iron beams, channel iron, shafting, plate, pig, and bar iron, girder beams, and rolled car axles, as well as iron shipbuilding, for which they have great facilities, having a wharfage front of over 3000 feet. The real estate consists of 52 acres of land, situated on Buffalo Creek, at what is known as Farmer's Point. On this land is situated 84 tenement houses for the workmen and their families. The blast furnaces are each 50 feet high, one 14 feet across the boshes, and the other two are 15 and 18 feet respectively, with a capacity of 30,000 tons of pig iron per annum, using 50,000 tons of ore, 50,000 tons of coal, and about 30,000 tons of limestone in its production. The blast is made by three vertical engines, one of 300 horse-power, 42 inches in diameter, with a seven foot stroke, and the other two are 250 horse-power, 36 inches in diameter, with a seven foot stroke, with pumping engines, 8x10 inch and 12x10 inch steam cylinders, and one No. 7 Knowles pump. There are also 22 double cylinder boilers, 40 inches in diameter and 40 feet long. The coal used in these furnaces is the anthracite of Eastern Pennsylvania, the Pittston, Scranton and Lehigh. The ores are from Lake Superior, Lake Champlain, St. Lawrence county, N. Y., and Canada. Situated as these works are, where the canal and the lakes meet, the owners are enabled to combine the ores of the country for the production of iron. The rolling mill is an immense building, one of the largest manufacturing establishments in Western New York. The mill is 600 feet long by 90 feet wide, with three wings 100, 150, and 200 feet in depth respectively, having a fireproof iron roof. In it they consume 3000 tons of coal per month, and its capacity is 15,000 tons of wrought iron beams, 10,000 tons of merchant iron or 30,000 tons of rails per annum. The company contemplate erecting a large foundry in connection with their other works. They employ over 1000 men.

A joint stock company is being organized in Utica, for the erection of new rolling mills in that city. The capital stock is placed at $50,000, and the machinery and building are estimated to cost $350,000.

The Silsby Manufacturing Company, Seneca Falls, have contracted to furnish Philadelphia with six of their celebrated fire engines, Buffalo with four, Chicago three, and Cleveland two. The works are now running day and night to meet the continuous demands for their manufactures.

CONNECTICUT.

The large four-story stone building occupied by the Barnard & Son Shear Manufacturing Co., situated about two miles from Waterbury, was destroyed by fire Nov. 30. The loss is $35,000, and the insurance $20,000.

The manufacture of pig iron is to be started at New London by Lowell capitalists.

Trade Report.

Office of THE IRON AGE,
TUESDAY EVENING, Dec. 31, 1872.

The past week has been one of more than ordinary dullness in Wall street, and, as usual between the holidays, but little business has been done. The money market continues stringent, but there is every reason to believe that, by the middle of January, if not sooner, money will be much easier than for many weeks past. During the week rates on call loans have varied from 3-16 to ⅜ of 1 per cent. per day. Loans until Thursday have been made to-day at ⅛ @ ¼ and interest. Commercial paper is nominal, and those who were compelled to sell have done so at a heavy discount. There is less offering in the market than at almost any time during the past few weeks.

The gold market has been dull, but strong, and without important feature. The following shows the extreme fluctuations of the premium:

	Highest.	Lowest.
Thursday	112⅛	111⅜
Friday	112⅜	112
Saturday	112⅛	111⅞
Monday	111⅝	111⅜
Tuesday	112⅛	112

The stock market has been dull, and without feature of general interest throughout the week; closing strong on a small amount of business. The principal dealings have been in the stocks usually most active. We give below the highest and lowest of to-day's quotations on 'Change.

The bond market has been strong, but without other feature. State bonds are dull. The closing prices of governments are given below.

In general trade there is but little doing, though an improvement may be expected before long. The foreign trade movements for the week, so far as published, are as follows:

IMPORTS.

	1870.	1871.	1872.
Tot. for week	$4,874,656	$4,912,151	$4,575,759
Prev. reported	294,439,736	367,674,332	414,154,832
Since Jan 1	$299,314,392	$372,586,483	$418,730,591

Included in the imports of general merchandise for the week are:

Anvils	10	$200
Brass goods	22	2,618
Bronzes	16	2,810
Chains and anchors	86	3,341
Copper		5,534
Cutlery	111	98,714
Guns	34	6,567
Hardware	95	8,850
Iron, hoop, tons	3	198
Iron, pig, tons	730	21,129
Iron, sheet, tons	36	1,432
R. R. bars	2,036	35,065
Iron, cotton ties	333	1,130
Iron tubes	2,710	8,338
Iron, other, tons	1,110	50,450
Lead, pigs	16,308	92,348
Lead, tons	31	2,579
Metal goods	296	17,352
Nails	53	1,647
Needles	7	4,966
Old metal		853
Plated Ware	3	557
Per. caps	2	470
Saddlery	8	1,886
Steel	2,714	38,086
Tin, boxes	3,000	80,155
Wire	1,494	13,630

EXPORTS OF SPECIE.

Total for the week	$1,980,895
Previously reported	69,564,080
Total since January 1, 1872	$71,545,275

The bank statement is favorable, as far as the bank reserves are concerned, they having been strengthened by $4,468,700, gold, while the loss in legal tenders is $3,507,100. The total liabilities of the banks are $843,900 less than last week. The loans have been decreased $1,239,000. The banks now hold in what they reckon as lawful money $1,835,750 above the 25 per cent. requirement. The large loss of legal tenders is explained by the shipments of currency to the South and West, and by the Treasury policy. It is possible that money has been locked up, but there are no indications of it. The legal tender average last week was a falling one, the treasury during that week having a large amount out of the banks deposited with them early in October, in addition to having sold $1,000,000 gold without having bought any 5-20 bonds. The following is a comparison of the averages of the past two weeks:

	Dec. 21.	Dec. 28.	Differences.
Loans	$275,811,400	$274,572,400	Dec. $1,239,000
Specie	12,773,100	17,251,800	Inc. 4,468,700
Circul'tion	27,522,700	27,573,000	Inc. 50,300
Deposits	199,423,800	198,529,600	Dec. 894,200
Leg. Ten	44,626,700	41,119,600	Dec. 3,507,100

Foreign exchange is nominally quoted as follows:

	60 DAYS.	3 DAYS.
Prime bankers' sterling bills on London	109¾ @ 109¾	110⅜ @110⅝
Good bankers' do	109⅜ @ 109⅝	110⅛ @110⅜
Prime com. sterling do	108⅞ @ 109⅛	— @ —
Paris (bankers)	5·23¾ @5·25	5·18¾@5·20
Antwerp	5·23¾ @5·23¾	5·17½@5·18¾
Swiss	5·20 @5·21¾	5·15 @5·16¾
Amsterdam	40⅜ @ 40⅝	40⅝ @ 40⅞
Hamburg	95⅞ @ 96⅛	96⅜@ 97⅛
Frankfort	41⅛ @ 41⅜	41⅝@ 41⅞
Bremen	95⅞ @ 96⅛	96⅜@ 97⅛
Prussian thalers	72 @ 72⅛	72⅝@ 72¾

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. Currency 6s	113	113¾
U. S. 6s, 1881, reg	114⅛	114½
U. S. 6s, 1881, c	118	118⅛
U. S. 6s, 5-20 reg. May and Nov	113⅞	113⅞
U. S. 6s, 1862, c	113⅞	113¾
U. S. 5-20 1864, c	113⅞	113⅞
U. S. 5-20 1865, c	113⅞	113⅞
U. S. 5-20 1867, r. Jan. and July	113⅝	114
U. S. 5-20 1865, c. Jan. and July	116⅛	116⅜
U. S. 5-20 c. 1867, " "	117⅛	117⅜
U. S. 5-20 c. 1868	117⅝	117⅞
U. S. 10-40 reg.	109⅜	109⅝
U. S. 10-40 c	109⅜	110
U. S. 5s of 1881, reg	111⅜	112⅛
U. S. " c	111⅜	119⅛

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	100⅛	99⅝
Lake Shore	96	95⅝
Rock Island	111⅜	110⅝
Wabash	75⅜	74⅝
Western Union Telegraph	81⅜	79⅞
Milwaukee & St. Paul	54	53⅝
Pacific Mail	74⅝	72⅝
Erie	61⅛	60⅜
Ohio & Mississippi	48⅜	48
Boston, Hartford & Erie	8⅜	8⅛
Union Pacific	37⅝	37
C. C. & I. C	36¾	36⅝

Westward Freights by Rail.

The following is the winter tariff of freight rates by rail from New York to the principal points West:

NEW YORK TO		All Rail. Classes. 1st.	2d.	3d.	4th.	Special.
Cleveland	per cwt.	$·82	$·72	$·56	$·43	$·33
Sandusky	"	·90	·79	·61	·47	·36
Columbus	"	1·00	·88	·68	·52	·40
Cincinnati	"	1·15	1·01	·78	·60	·46
Louisville	"	1·39	1·23	·97	·76	·60
St. Louis	"	1·58	1·40	1·10	·85	·67
Cairo	"	1·60	1·41	1·09	·83	·64
Toledo	"	·96	·85	·65	·50	·39
Chicago	"	1·25	1·10	·85	·65	·50
Milwaukee	"	1·25	1·10	·85	·65	·50
Detroit	"	·88	·78	·60	·46	·35

GENERAL HARDWARE.

There is nothing special to remark in the state of trade this week. There are very few changes in price announced as yet; but nearly all the large manufacturers are revising their lists, and during January a great many changes will be made. These we shall publish with our usual fullness and promptness.

We print on another page the commencement of our Review of the Hardware Trade for 1872. This review will be read with great interest by every Hardware man, if we may judge by our own feelings when compiling it. It will be very useful for reference, and ought to be preserved. We believe that even to our most appreciative subscribers it will give a higher estimate of our weekly Trade Reports, from which it is made up. These reports give the details of all the matters mentioned in the summary, and with few exceptions the discount sheets mentioned have been printed in full, or when the changes have been few, all the new prices have been given. All the important changes in lists have been reported at length in its columns. More than two-thirds of the changes we have reported during the past year were published by us in advance of any circular; and for a very large proportion of them no circular was issued at all. The year 1873 is likely to be marked by many fluctuations in Hardware, and our reports will be more valuable than ever, as time and experience enable us to constantly improve our arrangements for reporting the changes in prices and the varying phases of the market.

The following discounts for Bright and Annealed and Coppered Wire will go into effect on the 2d instant. This is a decline of about 2½ per cent. from present rates.

Bright and Annealed	Nos. 0 @ 18	dis. 20 @ 25 %
" "	" 19 @ 26	dis. 30 @ 35 %
" "	" 27 @ 36	dis. 35 @ 40 %
Coppered	" 0 @ 18	dis. 15 @ 20 %

The following circular will be read with interest:

OFFICE OF THE KEYSTONE SAW, TOOL, STEEL AND FILE WORKS.
PHILADELPHIA, Dec. 24th, 1872.

To the Hardware Trade—GENTLEMEN: On and after January 1st, 1873, the trade east of the line of Pittsburgh and Buffalo will be required to sell at our list, 7½ per cent. discount; Pittsburgh, Buffalo, and west of the line, at 5 per cent. discount. This difference is to prevent any allowance for the expense of delivery.

We shall retain the extra discount until the end of the season, and allow it to those only who have not violated the above.

Price list and discount sheet will be forwarded in a few days.

HENRY DISSTON & SONS.

At a meeting of the Vise and Tool Association, held in Pittsburgh on December 20th, the following action was taken:—

Owing to the former unremunerative prices, and notwithstanding the temporary decline in the iron market, which is more than counterbalanced by the advances in labor, fuel, etc., it was

Resolved, That we shall strictly adhere and maintain the prices adopted at our meeting of September 1st, 1872.

TRENTON VISE AND TOOL WORKS,
KLOMAN, PARK & CO.,
KLEIN, LOGAN & CO.,
POWELL TOOL CO.,
AHL & CO.,
LOMAS & CO.

The following officers were elected for the ensuing year:

F. W. HUBLY, President.
L. H. AUERBACHER, Vice-President.
J. H. HEIMBUCHER, Sec'y and Treas.

The state of the Nail Market is much the same as has been reported in these columns for several weeks past, with this difference: that while last week lots of 500 kegs could be purchased at $5 rates, net, to-day a well posted buyer might purchase at the same rate in lots of 300 kegs. The card rates, $5·50, are still quoted, but are only nominal, $5·25 being a fair quotation for lots of 50 to 100 kegs.

In England a reaction has taken place in Iron and its manufactures; the downward tendency noted for several weeks past has given way, and Chains are now quoted in England about 5 per cent. advance on the lowest recent quotations; ⅜ Coil Chain is quoted here at 9 cents, gold, by the single cask. Trace Chains have advanced one penny. The feeling both here and abroad is greatly strengthened, especially as the stocks in this city are very light. Peter Wright's Anvils are firm at our quotations, with a good demand for this time of year, and light supply.

The manufacturers of Porcelain have agreed to have one joint depot for Knob Tops, Roses, Escutcheons, &c., and a uniform scale of prices. From this depot all mounters of Lock Furniture will be required to draw their supplies. Bliven & Mead are the agents.

The American Screw Company have declared a dividend of 20 per cent. Their dividends this year have been as follows: April 1, 10 per cent.; July 1, 20 per cent.; October 1, 25 per cent; December 31, 20 per cent.; total, 75 per cent., or $900,000 on their capital of $1,200,000. We are informed that they have also expended over $300,000 of this year's earnings in extending their works.

Sidney Shepard & Co., Buffalo, N. Y., have issued a new list, under date of January 1st, for Brooks' Patent Stove Board. By comparison with the last list issued by them (September 26, 1872), it will be seen that a number of new sizes have been added. In the former list the sizes advanced by four inches, while in the new they advance by two inches, thus giving three additional sizes of each pattern. In revising the prices, while some of the larger sizes have been advanced, the small and intermediate sizes have been reduced, and the discount increased from 25 to 30 per cent. We publish the revised list herewith:

ROUND. Inch.	Each.	SQUARE. Inch.	Each.	OBLONG. Inch.	Each.
24	$1·38	24	$1·50	24x28	$1·75
26	1·50	26	1·75	26x30	2·00
28	1·75	28	2·00	28x33	2·25
30	2·00	30	2·25	30x36	2·50
32	2·25	32	2·50	32x40	3·00
34	2·50	34	3·00	24x45	3·75
36	3·00	26	3·50	36x48	4·50

Among our special notices this week is one announcing that the name of the Hart Manufacturing Co. has been changed to that of the Hart, Bliven & Mead Manufacturing Co., to take effect January 1, 1873. They also announce that two new catalogues are in preparation by them, and state the method in which they will be distributed. The publication of such lists as these is so expensive that everyone will recognize the reasonableness of their rule, that only those ordering goods from them will be supplied with the book free of charge. The publication of these lists is opportune, all previous books having been rendered comparatively obsolete by the changes that have been made in the list prices of goods during the past year. This house has made the following changes in the prices of Carriage Hardware, to take effect January 1:

Silver Carriage Bands, list	add 10 %
Oroide " "	add 15 %
Silver Sockets, list	dis. 5 %
Oroide " "	add 10 %

CARRIAGE KNOBS.

	Per gross.
Japanned	$0·80
" English finished	1·40
Silver Capped	1·44
" Plated	4·00

Discount, 50 per cent.

All the above subject to a further discount of 5 per cent. if paid for in 30 days. Their new catalogue of Carriage Hardware will be ready for distribution in a few weeks.

The change made by the Cutlers' Association in their manner of selling goods, which was first published in our last issue, has been the theme of a good deal of conversation among the trade. So far as we know, the opinion of experienced merchants not connected with the Cutlery Association is decidedly unfavorable, both as to the object of the change and its success. Any doubt of the object of the Association in this new departure is prevented by their own language in the preamble and resolutions we printed last week, as follows:

Whereas.—The promiscuous distribution of "price lists" has caused a competition in the matter of discount alone—no regard being paid to quality, styles or variety;

Voted—That all "List Prices" heretofore issued by us are hereby made null and void.

Voted—That hereafter no "price lists" of any description be issued, but that all goods be sold at "net prices" based on the cost of production, and the requirements of the trade.

When they say that the "promiscuous "distribution of price lists has caused a "competition in the matter of discount "alone—no regard being paid to quality, "styles or variety," they make an effort to blame the plan of issuing price lists, which has become so universal in the American Hardware trade, with the unpleasant results due entirely to their own jealous competition with each other; and this statement of theirs is hardly consistent with the claim made when their association was formed: that competition in prices being thereby rendered impossible, the only rivalry that could exist between the members of the association would be in regard to "quality, styles and "variety." They now attempt to evade this competition by issuing "no price lists of "any description," and selling all their goods at "net prices based on the cost of "production and the requirements of the "trade." They do not say in so many words that they mean to get as high a price from each individual buyer as they can, but that is the obvious meaning; and we fail to see any possible advantage they can hope to gain from their "net prices," unless they intend to take advantage of the inexperience of their customers whenever they can, and to make many of them pay higher prices than they could buy at if they were able to drive a bargain on equal terms with a sharp salesman. That this will lead to a great deal of dickering about every order is plain; and we believe that buyers who take the necessary trouble will get good prices. But all confidence in prices will be destroyed, and jobbers everywhere will be without any guide as to the prices they can expect to get from their customers. Further consideration and investigation has only confirmed the opinion we expressed last week, that this is a retrograde movement, and one that will be troublesome, unsatisfactory and annoying alike to manufacturers and dealers.

We noted in our last issue the fact that the Plane makers had put Planes to discount 15 and 15 and 5 per cent. for first and second quality, respectively. The following are the prices and terms in full, as adopted by the association:

First Grade, Bench Planes	Dis. 15 per cent.
Second Grade, Bench Planes only	" 15 & 5 "
Moulding and Fancy Planes	" 15 "
Coopers' Wood Tools, except Tress Hoops	" 15 "
Plane Irons	List.

Parties purchasing $300 worth of the above named goods previous to July 1st, 1873, of any one member of this Association, shall be entitled to a credit of two and one-half per cent.

Parties purchasing $500 worth of the above named goods previous to July 1st, 1873, of any one member of this Association, shall be entitled to a credit of five per cent.

Parties purchasing $2000 worth of the above named goods previous to July 1st, 1873, of any one member of this Association, shall be entitled to a credit of five and two and one-half per cent.

The above credits to be allowable only on goods actually purchased previous to July 1st, 1873, and no credits will be made until the full amounts as above specified, are purchased.

Terms thirty (30) days, subject to draft at sight without notice if not paid at expiration of that time. Current rate of exchange on New York added.

Boxes will in all cases be charged.

Prices subject to change without notice.

All invoices made at prices ruling at date of shipment.

Prices guaranteed against any member of the Association.

Graham & Haines are getting nicely settled in their new store, No. 88 Chambers street, where they have much better facilities for the transaction of their business than before. They are fitting up the ground floor with taste as an office and sample room, and devoting their basements and lofts to their stock. Among the goods they put forward prominently are the Brushes made by C. W. Maguire & Co., of which firm they are members. This establishment makes a specialty of leather-back Horse Brushes, for which they took the only diploma given by the American Institute at its recent fair in this city. They make a very large line of these goods, running in price from $4 to $72 per dozen. They pay special attention to style and finish, and their goods are bought by some of the most fastidious buyers in the country. They can make special styles for any considerable buyer, and from their relations with Hardware men naturally cultivate that class of trade. The firm has not long been in existence, but they have built up a business of $150,000 a year, and have every facility for manufacturing to advantage. Graham & Haines offer a number of Straps of Veazey & White's Sleigh Bells, at a discount of 30 per cent. from list. The descriptions are enumerated in a special notice.

The Ætna Nut Co. are about to open a warehouse at 97 Chambers and 79 Reade street, where they will be represented by Mr. C. L. Campbell. They will keep in stock a full line of Hot Pressed Nuts and Machine Forged Nuts. Of Rivets they will keep a full supply of all kinds and sizes. Also, Table Butts and Trunk Hinges and Strap and T Hinges.

The trade in every part of the country will learn with regret of the death of George Rusher, of the firm of Durrie & Rusher. This firm, we believe, has existed longer without change than any other hardware commission house in the city, having been organized in 1857 or 1858, as the successor of Durrie & Ely. The manufacturers they represented are among the most important in the country, and their firm was very widely known. Mr. Rusher died of congestion of the kidneys, on Dec. 24th, aged 41 years, after an illness of about two weeks, and was buried on the 27th.

Landers, Frary & Clark will hereafter continue their New York store as an office and sample room, and making all shipments direct from their works at New Britain, Conn. They have completed arrangements for very speedy delivery in New York, and also have contracted with the different freight lines to deliver goods to the West at the same rates from New Britain as from New York, thus saving expense to the customer.

We printed last week the purport of a letter written us by five manufacturers of Cast Steel Shears, in which they stated that the price had been advanced to discount 60 per cent. In giving this statement to our readers, it became our duty to say that the principal houses in this city had heard nothing of this advance and were selling at our previous quotation of discount 60 and 7½ to 65 per cent. This has called forth a letter to us from the Connecticut Cutlery Company, of which we cannot better give the substance than by the following quotation. "We wish it distinctly "understood that our discount is 60 per "cent., and that we make our own prices; "and, furthermore, there are no parties in "New York who receive our goods at first "hands; and if you quote our discount, "make it special, (as you do Seymour's) 60 "per cent." The leading houses in this city have made no advance in the prices of Cast Steel Shears, and these prices are fairly represented by our quotation, *viz.*: Cast Steel Shears, new list, discount 60 and 7½ @ 65 per cent. At these prices no one need have any difficulty in buying all the Shears he requires; and we do not see the propriety of expecting us to print in our list of *New York* wholesale prices, rates greatly higher than goods are regularly selling at here.

On the 27th ult. there was a meeting of Hinge Manufacturers at the St. Nicholas Hotel in this city. It was unanimously voted, "That on and after January 1st, 1873, the price of Strap and T Hinges be, and hereby is, fixed at net list, with an extra discount of 5 per cent. to parties whose net purchases for the six months ending June 30th, 1873, amount to $1000." This agreement was subscribed to by the following manufacturers:

ROY & CO.,
LEWIS, OLIVER & PHILLIPS,
THE STANLEY WORKS,
E. W. GILMORE & CO.,
WHEELING HINGE CO.,
M. GREENWOOD & CO.,
C. HAGER & BRO.

The Stanley Works issue, under date of 1st instant, the following supplement to Catalogue of October, 1870:

HART'S PATENT LIGHT WROUGHT IRON BARREL BOLTS.

Brass Knobs, Common Staples.

Nos.	180	181	183	185	187
Inches	2¼	3	4	5	6
Per dozen	$0·75	0·95	1·10	1·30	1·50

These bolts are of the same general style as our regular Wrought Iron Barrel Bolts, the difference being that the bolts are made of smaller iron and the plates of thinner and narrower iron. We make for these bolts but one style of staple.

LIGHT WROUGHT IRON NARROW BUTTS.

Stanley's Pattern.

Inches	2½	3
Per dozen pairs	$0·80	1·00

WROUGHT IRON LOOSE JOINT BUTTS.

6x7 ..... 8·00 per dozen pairs.

WROUGHT IRON WASHERS.

(Reduced List.)

⅜	x 3-16	30c. ₩ lb.	1⅜ x 11-16	15c. ₩ lb.	
⅜	x ⅜	31c. "	1⅜ x ¾	15c. "	
½	x ¾	27c. "	1⅜ x 13-16	15c. "	
⅝	x 5-16	28c. "	2 x ¾	14c. "	
⅝	x 5-16	25c. "	2 x 15-16	14c. "	
15-16	x ⅜	19c. "	2 x 1	14c. "	
1	x 7-16	18c. "	2⅜ x 1⅜	14c. "	
1¼	x ⅜	16c. "	2⅜ x 1⅜	14c. "	
1⅜	x 9-16	16c. "	2⅜ x 1⅜	14c. "	
1⅜	x ⅝	16c. "			

New List, adopted Oct. 27, 1871.

Inches	6	8	10	12	14	16
Heavy Strap Hinges	13	13	12	11	11	11c. ₩ lb.
Ex. Heavy T Hinges	13	13	12	11	11	11c. "

WROUGHT IRON LOOSE JOINT BUTTS.

POLISHED AND BRONZED.

With Acorns and Washers.

Inches,	2x2	2x2½	2½x2	2½x2½	2½x3
₩ dz. pairs,	$7·80	8·40	9·00	9·60	10·80
Inches,	3x2½	3x3	3x3½	3½x3	3½x3½
₩ dz. pairs,	$12·00	13·80	15·00	15·60	16·80
Inches,	4x3½	4x4	4x4½	4½x4½	4½x5
₩ dz. pairs,	$18·00	20·40	22·80	25·20	26·40
Inches,	5x5	5x6	5½x5½	6x6	6x7
₩ dz. pairs,	$28·20	33·60	34·80	40·20	46·80

Above prices include Bronzed Screws to match butts. In ordering please state length of Screws required. Will furnish Silvered Acorns if preferred.

WROUGHT IRON PARLIAMENT BUTTS.

Polished and Bronzed, with Acorns.

2½ inch.	(Including Screws)	$9·00 per dozen pairs.
5½ "	" "	10·50 " "

WROUGHT IRON PARLIAMENT BUTTS.

Polished and Bronzed.

2½ inch.	(Including Screws)	$8·00 per dozen pairs.
5½ "	" "	9·50 " "

BRONZED LIGHT NARROW BUTTS.

Stanley's Pattern.

Inches	2½	3
Per dozen pairs	$2·25	2·50

Above prices include Bronzed Screws to match Butts.

JAPANNED LIGHT NARROW BUTTS.

Inches	2½	3
Per dozen pairs	$1·10	1·40

They also issue their revised discount sheet, in which we notice the following changes: Wrought Brass Barrel and Wrought Barrel, Brass Plated Bolts discount 25 per cent., formerly 15 per cent. Wrought Chest Handles, "Stanley Works," add 30 per cent., formerly add 40 per cent. Wrought Chest Handles, "Austin Beebe," add 25 per cent., formerly add 35 per cent. Wrought Iron Washers, new list, discount 4 cents per pound, formerly discount 3 cents per pound.

We notice the following removals to take place February 1st, 1873: Hilger & Sons, to 87 Chambers and 69 Reade streets, near Broadway. Stanley Works to 79 Chambers street. P. & F. Corbin will occupy the 1st floor of 87 Chambers and 69 Reade streets.

IRON.

American Pig.—The year 1872 gave early signs that its course would be marked by very unusual features. The demand in December, 1871, from the seaboard was bar than usual; but consumers thought $36 was too high a price at which to con-

tract, and many of them held out obstinately for at least the concession of a dollar. At the same time the demand from Pittsburgh and the interior was so great as to take very large quantities; and during the winter the Lehigh companies were selling forge irons in Pittsburgh at prices which netted them at the furnace fully as much as No. 1 extra sold in this market.

Early in January contracts for a large amount of iron were made at $36, and the price advanced, our quotation on the 17th being $37@$38. On the 24th the price was $38; Feb. 1st, $40; Feb. 8th, $41 @ $42; Feb. 22d, $42 @ $45; March 7th, $45; March 14th, $47 @ $50; March 21st, $50. The course of the market for the rest of the year is shown with sufficient clearness by the following table of monthly prices for a number of years:

First week in	1866.	1867.	1868.	1869.	1870.	1871.	1872.
January	$51 00	48 00	38 00	40 00	35 00	30 00	36 00
February	51 00	45 00	35 00	40 00	35 00	30 00	40 00
March	49 00	46 00	39 00	42 00	34 00	32 00	45 00
April	40 00	40 00	37 00	42 00	33 00	34 00	50 00
May	42 00	40 00	37 00	41 00	32 00	34 00	50 00
June	42 00	41 00	37 00	40 00	32 00	34 00	50 00
July	48 00	41 00	38 50	41 00	32 00	34 00	52 00
August	48 00	43 00	42 00	41 00	33 00	34 00	54 00
September	48 00	44 00	42 00	40 00	33 00	37 00	55 00
October	48 00	44 00	42 00	40 00	32 50	37 00	55 00
November	49 00	42 00	42 00	39 00	31 00	37 00	55 00
December	49 00	40 00	40 00	38 00	31 00	36 00	50 00

There is very little, if anything, new to write in regard to American Iron. The market has naturally ruled very quiet the last week of the year, and the general position is without essential change. A few consumers have been looking around with a view to contracting for supplies for next year's use, but most makers appear rather indifferent about making contracts as yet. We quote nominally for Lehigh brands, $45 for No. 1, $43 for No. 2, and $40 for Gray Forge.

Scotch Pig.—The market continues quiet, but firmer, with holders asking an advance on most descriptions. Advices from abroad continue to report advancing prices, and this, together with the extremely light stocks here, has strengthened importers in their views. We hear of sales of only 100 tons Glengarnock, from yard, at $50. We quote Coltness and Gartsherrie at $55; Glengarnock at $50@$52, and Eglinton at $48 @ $49.

Following are the prices of Scotch Pig Iron in Glasgow, as reported by Messrs. J. E. SWAN & BRO., under date of Dec. 13;

GLASGOW BRANDS.

	No. 1	No. 3	No. 4
Gartsherrie	130/	110/	....
Coltness	130/	110/	....
Summerlee	125/	108/	110/
Langloan	†127/6	105/	....
Govan	110/	105/	105/
Calder	*130/	105/	....
Shotts, Bessemer	155/	150/	....
do Ordinary	125/	105/	....
Carnbroe	115/	105/	110/
Wishaw	....	....	....
Monkland	110/	105/	....
Chapelhall	125/	105/	....
Clyde	110/	105/	....
Quarter—Clyde	110/	105/	102/6

Glasgow Warrants 3-5, No. 1; 2-5, No. 3, g. m. b. 105/7½.
*f. o. b. Glasgow, 1/ per ton, extra.
† " " 6d. " "

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock, Ardeer, Eglinton, Lugar, Muirkirk, Portland (Branded Eglinton)	115/	105/	....
Dalmellington	112/6	105/	100/

CURRENT RATES OF FREIGHT ON PIG IRON.

To	From Glasgow.	From Ardrossan.
New York	15/	10/
Boston	20/	12/6
New Orleans	9/6	9/
Baltimore	20/	20/
Philadelphia	20/	15/
Providence	20/	15/

Bar.—The market continues quiet for Refined Bar from store—the almost impassable condition of the streets restricting the movements of goods, and adding to the natural dullness of this season of the year.

Rails.—New English Rails are dull and nominal at $71@$72, gold. New American continue inactive, and prices are scarcely so firm as heretofore. We quote nominally at $80, currency, from the mill.

We are indebted to Messrs. S. W. HOPKINS & Co., New York and London, for the following statement of the exports of railway iron from Great Britain for the month ending Nov. 30th, 1872, and eleven months ending at same time, compiled from official sources:

To	Month ending Nov. 30, 1870.	1871.	1872.	11 Mos. ending Nov. 30, 1870.	1871.	1872.
United States.....tons.	20,550	31,974	31,064	371,188	473,687	441,074
British America..... "	790	1,631	3,852	35,495	61,517	76,304
Spanish West India Islands "		436	630	3,198	3,009	1,768
Brazil..... "	1,561	2,313	2,702	4,788	19,404	19,133
Chili..... "	1,691	....	30	15,480	11,164	2,713
Peru..... "	....	4,497	2,305	13,690	36,613	32,906
Russia..... "	2,470	3,197	13,784	206,473	78,225	99,044
Sweden..... "	83	621	913	2,678	8,389	11,158
Germany..... "	2,508	3,681	6,889	50,013	49,640	49,336
Austrian Territories "	860	2,301	68	96,355	94,173	49,336
France..... "	181	24	148	3693	2,648	7,057
Holland..... "	1,103	4,195	4,604	15,395	14,566	7,658
Spain and Canaries "	1,384	1,506	330	11,983	13,145	9,127
British India..... "	1,506	1,132	602	146,413	83,488	13,605
Australia..... "	256	....	3,656	8,054	13,146	22,154
Egypt..... "	61	6,706	644	2,177	12,384	9,916
Other countries..... "	6,940	7,751	11,259	61,210	75,723	72,793
Total.....	33,958	72,364	81,702	1,054,949	1,049,869	881,610

Old Rails.—We do not hear of any transactions the past week, and the market must be considered nominal at, say, $50, currency, for old English Double Head and T Rails.

Scrap.—This description of iron has shared in the general dullness of the metal market, and we do not hear of any business. From yard the nominal quotation is about $45, and $40 from dock.

METALS.

Copper.—There has been a heavy movement in all descriptions of Ingot the latter part of the current week, and prices show a decided advance, closing very strong and excited at the higher figures. The demand has been principally speculative. Sales include 1,050,000 pounds Lake Copper, commencing at 32½c., and selling up to 34c., cash, and February and March delivery, and 200,000 pounds Baltimore Copper on private terms. We quote Lake at the close at 33½c. @ 34c., cash, and 34c. for future delivery. The advance in domestic has strengthened holders of foreign Copper, and the price of English Best Selected has advanced to 30c. The business in this description has also been large, reaching about 200 tons, at 28¾c. @ 29½c. Manufactures of Copper and Yellow Metal continue steady at former figures. We quote New Sheathing at 45c.; Bolts and Braziers, 45c.; Bronze and Yellow Metal Sheathing, 27c.; and Yellow Metal Bolts, 30c., cash.

Lead.—Foreign Pig from first hands is still held firmly at 6½c. @ 6⅝c., gold, for ordinary, but stock can be purchased from second hands at 6⅜c., gold. Manufactured Lead is steady at 9¼c. for Bar, 11c. for Sheet and Pipe, and 16½c. for Tin Lined Pipe, less the usual discount.

Tin.—There has been scarcely any demand for Pig the past week, neither buyers nor sellers appearing anxious to operate at the close of the year. Prices remain about as last given, but must be considered wholly nominal in absence of transactions. We quote Straits, 31c. @ 31½c.; English, 31¼c. @ 31½c., and Banca 37c., all gold prices. Tin Plates are also inactive, but holders are very firm in their views, expecting an active trade and higher prices with the advent of the new year. We quote I. C. Charcoal, $10·75 @ $11; I. C. Coke, $9·50 @ $10; Coke Terne, $8·50 @ $9·50; and Charcoal Terne, $9·75 @ $10·75.

Spelter and Zinc.—Cable advices reporting an advance abroad in Spelter, with very light stocks in England and other countries, has strengthened this market materially. Early in the week there was considerable speculative inquiry, and some 150 tons Silesian changed hands at 6¾c. @ 6⅞c., and toward the close 25 tons sold at 6·90, which is about the holding figure. The stocks here are also light. Zinc has ruled dull, but about steady at 10c. @ 10½c.

Antimony.—Regulus continues dull and nominal at 14¼c. @ 14c½., gold, which is below the cost of laying it down here at present prices abroad.

Nails in 1872.

In our review of the Hardware trade for the year 1872 (commenced in this issue), will be found a record of the deviations from established rates. Below we publish the card rates for Nails for twelve months ending December 31st, 1872, with the dates on which they were established.

January 11th	$4·75
February 15th	5·00
March 12th	5·25
April 3d	5·75
May	5·75
June	5·75
July	5·75
August 21st	5·80
September 12th	6·00
October	6·00
November	6·00
December 10th	5·50

PHILADELPHIA.

The metal market opening this week shows a considerable activity, and prices are firmer. Sales of considerable lots of Lehigh Forges and Foundry are reported. Some of the prominent Lehigh companies report very large transactions. The belief is gaining ground that a decided reaction in prices will obtain immediately after January 1st. The anticipated coal strike abroad, it is thought, will assist materially in enhancing values. Sales of 3000 tons Glendon Gray Forge at $40 for next year's delivery, and some 5000 tons Nos. 1 and 2 extra, at equal to $44 to $45 for No. 1, and $43 to $44 for No. 2 extra, are reported. In New Rails there is more inquiry, but mostly for spring deliveries. The mills, however, prefer January to February deliveries and are inclined to make concessions for those deliveries. Would quote $80 to $83 at mill as the ruling prices. In Bar Iron more inquiry has been made in the past ten days than for a month previously. Most of the stores are without any considerable stocks on hand, and several large orders have been placed with the mills, in consequence. 4·5 is still the nominal basis, though some transactions of 4·2 have been made.

PITTSBURGH.

DEC. 28.—The opening up of the market for Pig Iron, which it was expected would not take place till New Year's, has already taken place. The price having settled down to $40 (which figure is a copromimse between the views of the buyers and sellers), induced many of the consumers to place their orders, and we are able to report largely increased sales. We hear of other sales beside those reported below, but are without details as to prices and terms, and are therefore unable to report them.

At a meeting held yesterday of the Iron and Nail Association, it was decided to make no change in prices, but to adhere to present card prices. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

200 tons gray forge	$38 50—4 m.
200 tons silvery mottled	P T
300 tons gray forge	38 50—4 m.
200 tons gray forge to arrive	40 00—4 m.
70 tons white and mottled	38 00—4 m.
1,000 tons gray forge to arrive	40 00—4 m.
1,000 tons gray forge to arrive	40 00—4 m.
1,000 tons gray forge to arrive	40 00—4 m.
600 tons gray forge to arrive	40 00—4 m.
300 tons gray forge to arrive	40 00—4 m.
300 tons gray forge to arrive	40 00—4 m.
500 tons gray forge to arrive	40 00—4 m.
500 tons gray forge to arrive	40 00—4 m.
500 tons open gray forge at furnace	40 00—4 m.

ANTHRACITE.

250 tons red short forge	$37 00—4 m.
90 tons A No. 1 foundry	46 00—4 m.
100 tons No. 2 foundry	40 00—4 m.
300 tons white mottled	36 00—4 m.
200 tons white mottled	36 00—4 m.
200 tons white mottled	36 00—4 m.
300 tons white mottled	36 00—4 m.
10 tons No. 1 foundry	48 00—4 m.
30 tons No. 2 foundry	44 00—4 m.
200 tons mottled and close gray	38 00—4 m.

BLOOMS.

30 tons No. 1 Juniata	$120 00—4 m.
30 tons No. 1 Juniata	107 50—4 m.

—*Commercial.*

CHICAGO.

DEC. 26.—*Hardware*—The market is without quotable change; prices firm and steady. *Iron, Steel and Nails*—The price of all grades of Wrought Iron are about the same as last week, though the market is quite unsettled. Steel and Nails are unchanged. *Pig Iron*—The market for all descriptions of Scotch Pig is $2 per ton lower. American Pig remains unchanged. *Tinners' Stock*—There has been nothing of importance to report. The indications are favorable to an advance on Tin Plate before long; the English market is very firm, and prices in New York have advanced. Other Metals remain unchanged.—*Chicago Jour. of Com.*

Messrs. CRAGIN BROS. & Co., under date of December 28th, 1872, write us as follows:—Trade is very dull, owing to the holiday lull and the prevalence in the country of the horse disease, which paralyzes country business. We have no change in prices to note.

BOSTON.

DEC. 28, 1872.—The demand for iron continues very moderate, though no more so than is usual in December. We mentioned last week an improved feeling in the market for Refined Bar as a result of foreign advices. We have to note a continuance of this feeling, and a strong upward tendency, the result of cable advices announcing an advance of £1 per ton in England. There has been, as yet, little or no advance in prices here, except that where list rates have been shaded for the last few weeks on sizes which were plenty, full list rates are now charged. As assortments are badly broken now, and it can be but a few months before there will be a heavy demand for use in re-building the burnt district, the advance in England, it would seem, must bring a corresponding one here, especially as Bar Iron cannot be laid down here to sell at present rates. There is little reason to doubt that the present advance abroad will be maintained. The Boston market for Pig Iron is quiet, and prices are unchanged as yet, though there is a firmer feeling in Scotch, the home price of which tends upward. There is very little demand for Pig just now here, and will not be for a few weeks. American Pig Iron is unchanged and quiet. We quote yard lots of American at $55 to $58 per ton, including No. 2 extra at $55, and No. 1 at $58. Scotch is held firmly. We quote Eglinton at $52, Coltness at $58 to $59, Gartsherrie at $58 to $59. American and English Bar are selling fairly at $105 to $117·50 per ton for the ordinary sizes, and $125 to $150 for extra sizes, according to size. Cast Steel is selling at 16c. for English, gold, and 16c. to 18c. for American, currency. Anchors are selling at 8¼c. per lb.; Chain Cables (⅝ to 2 inches thick), 7c. to 8¾c. per lb.; Coil Chains, 7¼c. to 16c. from 3-16 to 1¼ inches. Boiler Plates remain steady. We quote at 8¼c. for Flanges, 6¾c. for C No. 1, and 6c. per pound for Common and Tank. Russia Sheet is steady at 18c. to 19c., gold, and 22c., currency, for perfect lots. English and American do. are very firm, and selling at 7¾c. to 9c. per lb., currency. Galvanized Sheet Iron remains steady and active at unchanged prices. We quote No. 20 at 12c.; Nos. 21 to 24, 13c.; 25 and 26, 14c.; 27, 15c.; 28, 16c. Nails are in fair demand, with sales at $5·50 for 10d. to 60d., and other sizes at a range of $6 to $8 per 100 pounds.—*Com. Bulletin.*

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, corner of South Charles and Lombard streets, report us the following prices, under date of Dec. 31, 1872: The iron market the past week, owing to the holidays and the severe weather, has been excessively quiet in all kinds of iron. No sales of any moment have been made, and as a consequence quotations remain unchanged.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick	4¼c. to 4¾c. per lb.
1 to 4½ wide by 1¼ to 2 thick	
Round and square, ordinary sizes, from ⅝ to 2 inclusive	4¾c. to 4¾c. "
Hoop Iron, 1¾ wide and upward	5¾ to 6 c. per lb.
Band Iron, from 1¾ to 4 in. wide	.5 to 5¾c. "
Horse Shoe Iron ⅜ to 1 wide by ⅛ to ¾ thick	5¾ to 5¾c. "
Norway Nail Rods	7¾c. to 8c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	17c. "
Machinery Steel	11¾c. "
Cast Spring Steel	11c. "
Homogeneous Steel Plate	13c. "
Perkins' Horse Shoes, per keg of 100 lbs	$6·87½
" Mule Shoes " "	7·87½

Common Horse Nails, from 14c. to 18c. per pound.

	10	9	8	7	6	
Putnam Horse Nails	25	26	27	28	30	c. per lb.
R. R. Spikes	5¼ by 9-16 at 5¾c. per lb.					

CINCINNATI.

Messrs. ADDY, HULL & Co., under date of Dec. 28, write us as follows:—*Pig Iron.*—The market has ruled dull throughout the week, with more inquiry, however, at the close, and prospect of a moderately active trade early in the New Year.

HOT BLAST CHARCOAL.

Hanging Rock	No. 1	$57·00 @	—4 mos.
" "	No. 2	54·00 @ 55·00	—4 mos.
" "	Forge	46·00 @	—4 mos.
Tennessee	No. 1	54·00 @ 55·00	—4 mos.
"	Forge	46·00 @	—4 mos.
Alabama	No. 1		—4 mos.
Missouri	No. 1	57·00 @	—4 mos.
"	No. 2	55·00 @	—4 mos.
Iron Mountain	No. 1	59·00 @	—4 mos.
Irondale	No. 1	59·00 @	—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel		$60·00 @ 63·00	—4 mos.
Missouri	" "	60·00 @	—4 mos.
Tennessee	" "	58·00 @	—4 mos.
Alabama	" "	60·00 @ 63·00	—4 mos.
Monitor		63·00 @	—4 mos.
Bibb		63·00 @	—4 mos.
Shelby		63·00 @	—4 mos.
Maramec		60·00 @	—4 mos.
McKee		60·00 @	—4 mos.
Etna		60·00 @	—4 mos.

STONE COAL.

Missouri	No. 1	$54·00 @ 55·00	—4 mos.
"	Forge	45·00 @ 46·00	—4 mos.
Ohio	No. 1	53·00 @	—4 mos.
"	Forge	45·00 @	—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of Dec. 30, writes us as follows: The market continues without improvement. Sales are confined to the immediate requirements of consumers, and no change in this respect is looked for until after the 1st of January. Stocks will then be considerably reduced, and a better demand is expected. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from	Hanging Rock Ores	$57·00 @ 59·00
" 2 "	" "	53·00 @ 56·00
" 1 Forge,	" "	50·00 @ 51·00
" 1 F'dry, from	Tennessee Ores	56·00 @ 58·00
" 2 "	"	53·00 @ 55·00
" 1 Forge,	"	50·00 @ 51·00
" 1 F'dry, from	Alabama Ores	58·00 @ 59·00
" 1 "	Iron Mountain Ores	59·00 @ 60·00

HOT BLAST STONE COAL.

No. 1 F'dry, from	Missouri Ores	56·00 @ 57·00
2 "	"	52·00 @ 55·00
" 1 Forge,	"	49·00 @ 50·00

COLD BLAST CHARCOAL.

Car Wheel from	Hanging Rock Ores	60·00 @ 65·00
" "	Tennessee Ores	59·00 @ 60·00
" "	Alabama Ores	60·00 @ 62·00
" "	Georgia Ores	60·00 @ 62·00
" "	Missouri Ores	58·00 @ 62·00
" "	Kentucky	58·00 @ 60·00

CLEVELAND.

Messrs. CLEVELAND, BROWN & Co., under date of Dec. 30, write us as follows: Though there are no quotable changes since our last, there is a much firmer feeling among mill men and dealers than has been shown for a month past, and orders cannot be placed at as low rates as they could a week ago. We herewith hand you our market prices:

BAR IRON, 4·6-10 rates.
NAILS, 85@35 rates.
SHEET, 6 7-10 for No. 24, other numbers in proportion.
GALVANIZED, 17½ to 20 per cent. off list.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending December 31, 1872:

Hardware.

Boker Hermann & Co.
Mdse. pkgs., 24
Cooper, Harris & Hodgkins.
Cases, 3
Cliff John.
Cutlery, cases, 1
Degraw, Aymer & Co.
Mdse. pkgs., 5
Frasse & Co.
Wire, pkgs., 5
Field A. & Co.
Mdse. pkgs., 39
Casks, 2
Gill John.
Wire, casks, 1
Hildick A. H.
Anvils, 50
Hugill Chas.
Cases, 1
Jenks Jos. Jr.
Casks, 8
Crates, 2
Kentworthy T.
Casks, 1
Laughland & Co.
Wire, bdls., 8
Wire goods, cks., 1
Lawton & Lenox.
Wire, lots, 222
Milliken S. Jr.,
Wire, bdls., 122
Peace Chas. Jr.
Cases, 1
Robbins, Clarke & Biddle
Cases, 1
Schuyler, Hartley & Graham,
Guns, cases, 3
Sawyer John,
Wire rope, coils, 2
Schoverling & Daly.
Mdse. pkgs., 2
Schweitzer Mfg. Co.
Mdse. pkgs., 4
Spies, Kissam & Co.
Mdse. pkgs., 1
Turnor Richard A.
Anvils, 37
Cases, 4
Tillotson L. G. & Co.
Galv. wire, lots, 362
Van Wart & McCoy.
Mdse. pkgs., 19
Western Union Tel. Co.
Galvanized wire, lots, 218
Whitney W.
Rivets, casks, 2
Wiebusch F.
Casks, 9
Witte John G. & Bro.
Mdse. pkgs., 19
Order.
Cases, 5
Pig, tons, 360

Iron.

Abeel Bros.
Bars, 1623
Alexander S. J.
Rods, bdls., 450
Bussing, Crocker & Co.
Pig, tons, 375
Bruce & Cook.
Sheet, bdls, 600
Congreve Chas. & Son,
Rails, 1289
Dale John G.
Pig, tons, 60
Goddard Bros.
Boxes, 100
Grasser & Bros.
Scrap, tons, 34½
Griswold J. A. & Co.
Pig, tons, 300
Holdane, Hopkins & Stokes,
Hoop, bdls., 278
Holdane J. H. & Co.
Tubes, 600
Flues, 400
Jarvis G. E.
Rails, 1240
Lang W. Bailey & Co.
Plates, 51
Bars, 377
Laughland & Co.
Haybands, bdls., 600
Maitland, Phelps & Co.
Scrap, tons, 75
Milliken S. Jr.
Rods, bdls., 2303
Montell & Bartow.
Scrap, bdls., 109; lots, 1
Pigs, 18
Michelena S. & Co.
Scrap, tons, 160
McNab & Harlin,
Pipe, pcs., 2; bxs., 1
Nightingale & Kilton.
Bars, 105
Naylor & Co.
Fish plates, bdls, 284
Phelps, Dodge & Co.
Sheet, bdls., 555
Sampson Bros.
Flues, 180
Whitney A. R.
Bars, 121
Whitney C. W.
Bars, 85
Flues, 488
Order.
Rails, 4153
Scrap, tons, 89
Sheet, bdls., 298
Rods, bdls., 137
Cases, 2
Bundles, 214
Angle, bdls, 161
Hoop, bdls., 241
Without bills of lading.
Pig, tons, 184

Steel.

Abbott & Howard,
Bundles, 40
Cooke Jay & Co.
Bessemer rails, 675
Cockayne J. W.
Cases, 33
Drexel, Morgan & Co.
Rails, 480
Hugil Chas.
Bundles, 114
Cases, 7
Hannibal Green & Son,
Bundles, 780
Hogan John.
Cases, 7
Casks, 9
Bundles, 141
Justice P. S.
Crank pins, 80
Jackson Wm.
Bundles, 95
Cases, 4
Lang W. Bailey & Co.
Blooms, 160
Moore Henry,
Cases, 21
Moss F. W.
Bundles, 155
Cases, 10
Naylor & Co.
Axles, 69
Tires, 68
Bundles, 17
Bars, 16
Van Wart & McCoy.
Bundles, 480
Vose, Dinsmore & Co.
Bundles, 125
Sheets, cases, 3
Tires, 4
Wardlow W. C.
Cases, 15
Bundles, 314
Bars, 1
Order.
Old spring, tons, 31
Rails, 3934
Bundles, 1375
Bessemer rails, 818

Metals.

Brand James,
Tin plates, bxs. 500
Barding & Davis,
Scrap, bbls, 59
Dickerson J. S. & Co.
Tin plates, bxs., 1050
Goodwin & Rice,
Tin and terne plates, bxs., 545
Hartley G.
Copper, pkgs., 41
Montell & Bartow,
Scrap copper, bdls., 4
Scrap brass, bdls., 34
Scrap, zinc, bdls., 18
Scrap lead, bbls., 1
Michelena S. & Co.
Scrap, copper, lbs, 25
Naylor & Co.
Tin plates, bxs., 500
Phelps, Dodge & Co.
Tin plates, bxs., 5173
Rogers J. O. & Co.
Sheathing, bxs., 26
Order.
Tin and terne plates, bxs., 3774
Lead, pigs, 890
Copper ingots, 3632
Tea lead, cks., 24
Ingot copper, casks, 2839
Scrap copper, lbs., 1000

The Hamburgh Metal Market.

(*Translated from The Iron Age, from the Borsenhalle.*)

HAMBURGH, Dec. 6, 1872.—METALS.—*Lead* is sustained at high prices, although on the spot but a light demand is observable. German 14⅝ to 15¼ marks; English, 15½; Spanish, of Rein & Co., 15¾. *Copper*—Keeps firm and steady, with a light supply on the spot. *Tin*—Is weak and favors purchasers. Banca at 18; English, 17; in rods, 17¼. *Spelter*—Is in a firm attitude. The sales during the week have reached 2500 centweights, ordinary brands, at 15 marks, 6 to 7/.

I. W. Muller & Co.'s Chinese Telegraphic Metal Quotations.

(*Per Anglo Indian Line via Point de Galle.*)

SHANGHAE, Dec. 5, 1872.—*L. B. Lead*—4·85 taels, the same as November 20. *Nail Iron*—3·70 taels against 3·85 November 20. Exchange, 6 months' sight, bank, 6/1 against 6/½d.

Maclaine, Watson & Co.'s Metal and Coal Report.

(*Communicated to The Iron Age, by Messrs. H. H. Swift & Co.*)

BATAVIA, Java, Oct. 30, 1872.—IMPORTS—Both Swedish and English Iron are firmly held for full rates. *Copper*—Is weaker. *Iron Nails.*—Are advancing in value, 14 guilders being offered in vain for a considerable lot. *Coals.*—A cargo of English arrived per Dutch ship, has been sold at 24 guilders, deliverable here. EXPORTS.—*Tin*—According to the official statement the stock of tin at Banca on the last of June amounted to 24,328·41 piculs, to which have been added in the third quarter, 3054·47, making together 27,382·88 piculs, less shipped to Java, 16,134·31, leaving stock there at the end of September, 11,248·57 piculs. The next sale of Billiton tin will be held on the 9th of December.

Arnold, Karberg & Co.'s Chinese Metal Review.

(*Translated for The Iron Age.*)

HONG KONG, Oct. 31, 1872.—METALS.—There have been great fluctuations since our last, and a great decline has taken place, prices, in the absence of transactions, closing nominal. An improvement is now soon expected. Sales, 840 piculs nail iron; 2530 piculs English rod iron; 840 piculs hoop iron; 210 piculs iron wire; 500 tubs steel; 650 piculs L. B. Lead; 200 piculs spelter and 370 piculs English quicksilver. Quotations, nail iron, $4 to $4·10; rod iron, English, $3·60 to $3·75; Swedish, $4·40 to $4·60; hoop iron, $4·75 to $5; iron wire, $7·80 to $8·60 per picul; steel, $3·80 to $4·40 per tub; common lead, $5·60 to $5·70; L. B., $5·60 to $5·70; W. B., $6·10 per picul; Spelter, $38 to $39 per picul; tin plates, $10·50 to $11·75 per box; English quicksilver, $97·50 to $98, and California, $98 to $99 per picul.

Siemssen & Co.'s Shanghae Metal and Coal Review.

(*Translated for The Iron Age.*)

SHANGHAE, Oct. 24, 1872.—METALS—Are remarkably quiet. The business has been on so restricted a scale that we have to repeat late quotations: *Nail Iron*—3·70 to 4.10 taels, nominally. *Rod Iron*—3·20 to 4·20, nominally. *Swedish Steel*—2·70 to 3·10 per 84 catties; German, 5 taels per picul. There are no Tin Plates left. *Quicksilver*—English, 76 taels; American, 80 to 83. *Coal*—Dealings limited to Japanese and Formosa coal. The offers made for other kinds have all been too low. We quote nominally: Cardiff, 10⅜ to 11 taels; English, 9¼; American, 9¼; Sydney, 9⅜ to 10; Newcastle (New South Wales) 9¼ to 9; Japanese, 5 to 5¾; Formosa, 5 to 6 per ton.

I. Mamroth's Prussian Metal Review

(*Translated for The Iron Age.*)

BERLIN, Dec. 7, 1872—METALS—Although this is a dull month, a firm feeling has prevailed during the week. The Iron Trade, in particular, has been characterized by this firm undertone, reacting favorably upon some other metals. Of Silesian Pig Iron several lots have been sold; prime Coke Pig has been offered at 4 4–5 thalers by producers, but may be had cheaper from second hands. Charcoal Pig is held 5-12 thalers higher. Scotch Pig is firm at 5½ to 5 5-6. Of English Iron, speculative purchases have been made at 4⅛ to 4½. Materials have been less enquired for, thus Parcel and Scrap Iron at 5; Iron to be re-cast, 3 1-6; and Cast Iron, according to quality, 4¼ to 4½. Of rolling-mill manufactures, deliverable at the Silesian works, the following quotations may be given: Rolling-iron, 12 thalers; Raw Rails, 8½; Sheet Iron, 18 to 19; and Forging-iron, 14 1-6, and upward. *Copper*—Current quality brands have been offered and taken at 59½ to 64 thalers. *Tin* has remained listless, and it has been difficult to repeat the prices paid last week of 104 for Banca and 99 for Lamb. A lot of 20,000 kilos of the latter, to be delivered in 1873, even went as low as 97½ thalers. *Spelter* is weak at the old quotations. *Lead* is higher. Freiberg, Saxonia, spot, 14⅝ thalers in large lots. *Coal*—There has again been but a light business in coal, and prices are more nominal than otherwise.

Import of Metals and Coal into Hamburgh.

(*Extracted for The Iron Age from the "Borsenhalle."*)

HAMBURGH, Dec. 11, 1872. The official bureau of statistics publishes the following interesting table of imports.

	Iron.	Rails.	Lead.	Tin.	Raw Spelter.	Coal and Coke.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Last.
1840	201,966	9,086	11,273	4,449	127,865	45,308
1841	284,547	76,348	11,051	5,061	60,930	68,843
1842	386,902	141,002	21,379	7,982	73,541	53,006
1843	369,946	10,394	15,742	6,286	150,081	54,600
1844	330,821	126,457	12,101	4,181	218,773	69,895
1845	370,499	608,455	33,674	6,194	73,169	86,139
1846	342,263	417,589	26,150	5,631	149,545	95,195
1847	515,550	541,260	13,396	7,832	258,436	117,950
1848	253,830	198,843	20,905	6,168	167,486	132,723
1849	240,574	42,815	33,552	12,513	240,456	124,127
1850	414,762	10,728	42,769	8,392	335,348	174,332
1851	439,227	57,417	27,127	5,930	242,454	185,276
1852	680,521	2,727	54,164	7,592	274,403	200,372
1853	580,718	81,712	52,669	8,401	317,026	165,401
1854	664,072	9,338	51,531	10,330	339,833	150,498
1855	782,951	8,405	51,891	8,239	338,465	221,639
1856	1,306,642	214,510	56,727	8,323	416,301	244,161
1857	1,052,254	105,726	46,884	5,444	409,669	236,674
1858	741,318	35,282	30,989	2,760	303,815	250,873
1859	629,871	18,905	12,377	3,658	404,941	243,544
1860	813,581	7,604	55,804	3,659	296,216	253,980
1861	903,359	22,377	77,159	7,973	302,926	275,745
1862	916,635	45,111	61,798	9,595	292,248	265,008
1863	1,161,929	62,101	99,867	8,345	322,979	271,998
1864	1,152,887	68,167	56,123	11,310	547,348	276,901
1865	1,378,303	60,301	102,161	11,003	309,467	303,893
1866	1,045,200	42,275	101,230	12,045	367,676	272,838
1867	1,369,653	38,393	107,598	9,397	405,860	303,521
1868	1,485,623	165,683	180,635	11,590	284,093	305,798
1869	1,566,349	85,555	268,057	10,483	248,405	346,863
1870	1,867,171	75,391	157,783	7,127	204,381	352,849
1871	2,677,174	195,401	184,225	13,256	169,990	526,590

The importation of iron, it will be observed, has of late years been steadily on the increase, having, from 903,000 cwts. in 1861, increased to 2,700,000 in 1871. The colossal movement in rails between 1844 and 1849 was due to the building of railways in Germany, and they were drawn from England. The political events of 1848 and 1849 brought this importation down to a mere trifle subsequently. The importation of lead has been swelled to great proportions during the thirty years. Tin presents no noticeable features, while spelter has been rather on the decline. The import of coal presents the steadiest increase and shows in a striking manner, coming as it in great part does from England, to what extent the leading Continental port draws upon the English supply.

As soon as the metal and coal statistics for the whole empire are completed by the statistical bureau, a picture of deep interest to American iron industry will be presented. It will point out in graphic, unmistakable language, the dazzling future reserved to the United States in the field of competition, and iron and coal mastery in the end.

The shipment of old rails to the United States in such large quantities is due to the circumstance that the European railway system converts its rails from iron to steel, a substitution not advocated in America because of the climate. The rails are sold cheap in those Euro-

pean countries not provided with machinery powerful enough to cut them up into scrap iron, and hence, at low freights, they are shipped to the United States, and there thus consumed. But this movement *will soon come to an end*, after affording American iron masters a cheap ingredient for their giant forges.

OUR ENGLISH LETTER.

Review of the British Iron, Steel and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Dec. 12, 1872.

The great and powerful combination of steel manufacturers which was entered into at Sheffiled some weeks ago, as mentioned in these letters at the time, does not appear to have any alarming effect upon the members of the Yorkshire, Derbyshire and Durham Coke Manufacturers Association. These held a meeting on Tuesday, the 10th instant, at Sheffield, and although a contrary result was pretty confidently anticipated, the meeting arrived at the following compact resolution; "that, having regard to the demand for coke being still in excess of the supply, and, also having regard to the consideration that the Mines Regulation Act will come into operation on the first of January next, the effects of which cannot be presumed, this association is of opinion that no change should at present be made in the price of coal." This resolve seems firm, and I apprehend that the coal owners will arrive at a similar decision when they next meet. No reduction in the price of fuel can reasonably be expected this year; in fact, I shall not be at all surprised by the announcement of an advance, should very cold weather set in. At present, we are having a pleasing but not healthy succession of heavy rains, violent winds, thick yellow fogs and hoar frosts, the last named of which, it is hoped, will soon become intensified into a keen frost.

Another very powerful combination has been formed in the district proper whence I write, and is entitled the "South Yorkshire Colliery Owners' Association, Limited." In order to carry out the objects of the association, it will have a nominal capital of £200,000, divided into 20,000 shares of £10 each. No person will be eligible for membership unless the colliery represented by him be insured to the extent of at least 100,000 tons of coal per year, and no person or corporate company representing a colliery shall hold less, in the aggregate, than two shares in the association in respect of every 1000 tons of coal got at such colliery during the previous year. The compensation shall in no case exceed 2 6, or be less than 1, weekly, for every ton of coal so insured, and the premium to be paid for insurance shall be at the rate of one penny in respect of each 1 of weekly compensation. No claim for compensation in consequence of a strike to be demanded by, or paid to, any colliery owner or company, unless such strike shall have existed for at least six days, and the rules and regulations provided in such cases have been complied with. The association also insures against unforeseen accidents, lends money for colliery developments, acquires the rights in coal cutting and working machines, with sundry minor objects. Altogether, it will readily be apparent that the association is being formed at a very opportune moment, seeing that the district hereabouts is at present in a pacific state, but no one can safely predict how long it may continue so.

The new Coal Mines Regulation Act comes into force on the 1st of January, and much general curiosity, not entirely unmixed with anxiety in some quarters, is felt as to how it will be found to operate. You have, I believe, already been made acquainted with the main provisions of the act, and there is, therefore, no reason for my recapitulating them. I may, nevertheless, take the opportunity of observing that the act provides that skilled managers shall be employed, thus securing, it is hoped, to a very large extent, immunity to the workmen from the dreadful accidents and risks to which they have often hitherto been subjected, solely through the ignorance or incompetence of those whose capabilities and knowledge should have been unceasingly exercised in their behalf. Should the act prove clumsy, or difficult to work, the immediate effect would probably be a rise in the price of coal.

Following the example of the South Yorkshire coal owners, or, at any rate, acting upon the same principle, the Scotch mine owners are on the point of uniting themselves in an association in order to ensure union and joint action amongst them, and with a view of mutual protection in all matters affecting the trade. All mine owners working coal, ironstone, shale, or other minerals, will be eligible for membership, and the primary object of the combination will be to resist unreasonable claims or demands of the workmen, to regulate, as far as possible, the rise and fall of wages, and also the daily "darg" or out-put. Other matters are also likely to be brought before the preliminary meeting of the association, which will be held in Glasgow this week.

The "long work" system of getting coal has been brought into very prominent notice this week at the meeting of the South Midland Institute of Mining, Civil and Mechanical Engineers, at Wolverhampton. Mr. John Getting, who has the practical working of some collieries near Wednesbury, showed that by the "long work" system—in preference to "square" work—he had been able to increase the yield of coal per acre by something like 200 per cent. Mr. Jones, President of the Institute, said he believed Mr. Getting must be obtaining more coal per acre than any other person in Great Britain. The statement has created some interest in the mining world here, and will no doubt commend itself to the consideration of such of your readers as are similarly engaged.

The annual meeting of the National Amalgamated Iron Workers' Association, held at Birmingham during the latter part of last week, and briefly alluded to by me in my last communication, being of some general interest, I have been trained to again refer to it in order to give a brief *precis* of the proceedings. On Tuesday the 150 delegates met—Middlesboro, Leeds, Sheffield, Merthyr, Swansea, Glasgow, Barrow, Staffordshire and every other iron making district being represented—and Mr. Shufflebotham, delegate for Harrington, was chosen president. Mr. Kane read the general secretary's report, detailing the number of members, lodges and so on, and mentioned that there had been an increase of 15,000 members during the last fifteen months. The association had also published its own "organ," which had already attained a large circulation, and they had succeeded in laying down a basis of wages by arbitration, by which wages rose or fell in accordance with the selling price of iron in the open market. On Wednesday it was determined to establish a special defence fund to be employed in defending and sustaining the interests of members in the case of strikes and lock-outs. A contribution of 6d. per quarter was fixed for that purpose. Other formal business was transacted, and during the remaining sittings of the Congress it was resolved to memorialize all employers in favor of puddlers being paid by the imperial ton instead of on the old and unfair system of "long weight," the subject to be referred to arbitration if requisite. It was resolved to use every species of moral suasion in order to induce underhands to become members of the association, and to cooperate with other trades unions in order to secure the return of artizan representatives to the House of Commons. Mr. Rupert Kettle, the well-known arbitrator, addressed the meeting on arbitration. Resolutions were also passed condemning strikes against managers, and that in no case shall workmen cease work without giving proper notice to the managers, with the approval of the association. It was also decided to support the men who are likely to be locked out in South Wales.

Several strikes and disputes exist, some of the more important of which were alluded to by me last week. Amongst others, a meeting of 130 delegates from various works in Wales, representing 16,000 iron workers, has been held at Merthyr Tydvil, at which it was resolved that the present market rates do not justify the reduction of 10 per cent., of which notice has been given by the owners. The strike of the London gas stokers has come to an end. The men struck before their newly formed union was strong, and in addition went out without sufficient cause.

The failure referred to in my last communication is that of Joseph Peace & Co. (Limited) Merchant Works, Sheffield, who have been compelled to call a meeting of creditors in consequence of financial difficulties. The liabilities are about 13,600, and as there is a deficiency, a dividend of 15 in the pound spread over eighteen months is likely to be accepted.

The iron markets throughout the country are in a somewhat firmer condition. Glasgow quotations are at present pretty strong at 97 to 98, cash—an advance upon last week's rates. Stocks in Cannal's stores have been reduced by 40,000 tons during the last month or so, and the total now in store there cannot exceed 100,000 tons. This, combined with the somewhat healthier general tone of the trade, will probably cause prices to react. Following are current rates at date:

Gartsherrie, No. 1	125/0	No. 3, 102/6.	
Coltness	" 125/0	" 100/0.	f. o. b. in the Clyde.
Calder	" 125/0	" 105/0.	
Langloan	" 125/0	" 100/0.	
Summerlee	" 120/0	" 105/0.	
Glengarnock	" 115/0	" 99/0.	f. o. b. at Ardrossan.
Eglinton	" 107/6	" 97/6.	
Shotts	" 120/0	" 100/0.	f. o. b. in the Forth.
Kinneil	" 110/0	" 100/0.	
No. 1, g. m. b.	" 96/0	" 92/0.	
Clyde	" 100/0	" 90/0.	
Govan	" 100/0	" 90/0.	
Dalmellington	" 107/6	" 97/6.	
Monkland	" 120/0	" 100/0.	

These have, if anything, a tendency, with one or two exceptions, to become stiffer. Shipments from Middlesborough to Grangemouth continue to be on a smaller scale. Very little change has taken place in the condition of the Scotch malleable iron trade. At the Middlesborough Exchange, on Tuesday, a healthy feeling was exhibited, and most makers were very firm in their quotations. Some few, indeed, are willing to get good contracts as low as 85 for No. 3, but the figure is exceptional, most houses being content with nothing under 95. In this district there are now 130 furnaces in blast, and their total production last month was nearly 160,000 tons, a decrease of over 5000 tons, as compared with the previous month. In finished iron there is a fair business doing, with no marked departure from prices previously quoted. Several good orders for rails have, however, been placed in the district, and the shipbuilders are fairly busy. In the Barrow-in-Furness district the blast furnaces and steel works are busy, the principal works having a large contract for rails on hand for delivery in 1873 and 1874, for the Grand Trunk of Canada. 14,000 tons of steel rails are to be delivered in 1873, and 14,000 in 1874, all at £10. 10 per ton.

The Birmingham and Wolverhampton houses are pretty firm, and do not care to make forward contracts at present rates. Bars are £11 to £12; sheets and plates £13 to £17; and pig ranges from £4 to £7. As a rule, most of the manufacturers are well employed; but malleable iron castings, iron bedstead, brass and copper tubing, sheet metal, gas fittings, brass foundry goods are lowered 10 to 15 per cent. The price of all kinds of chains, cables, and such goods is likely to be largely advanced, owing to the Act of Parliament which comes into operation in January, 1873, prescribing severer tests to anchors, cables, &c. In Wales the state of affairs is not so satisfactory, orders being very few and poor. Dowlais and Cyrfartha have some good American orders on hand. Dowlais has shipped bars to Oporto; Ebbw Vale, 1300 tons of rails to New Orleans, 1000 tons to Genoa, and 920 tons to St. Johns; Nantyglo 280 tons finished iron to Turkey, and Aberdare 400 tons of rails to Galveston. A leading firm at Swansea (Letricheu) has just sent 1000 boxes of tin plates to Nantes. The total exports of iron from Cardiff during November were 17,053 tons, and coal 201,240 tons, whilst 18,226 tons of ore, mostly Spanish, Manx, &c., were imported.

The following figures will probably be of some interest to your trade, as showing the production of iron in Great Britain during 1871: 21,948 tons of iron ore were produced inCornwall; 14,125 tons in Devonshire; 32,884 tons in Somersetshire; 207,599 in Gloucestershire; 159,894 tons in Wiltshire; 28,330 tons in Oxfordshire; 779,314 tons in Northamptonshire; 290,673 tons in Lincolnshire; 415,972 tons in Shropshire; 34,075 tons in Warwickshire; 1,513,080 tons in North Staffordshire; 705,665 tons in South Staffordshire; 492,973 tons in Derbyshire; 981,048 tons in Lancashire; 1,302,704 tons in Cumberland; 4,581,901 tons in the North Riding of Yorkshire, and 407,997 tons in the West Riding; 285,297 tons in Northumberland and Durham; 51,887 tons in North Wales; 969,714 tons in South Wales and Monmouthshire; 75 tons in the Isle of Man; 3,000,000 tons in Scotland; 107,734 tons in Ireland. The total iron ore production of the United Kingdom, of which returns were received, amounted, therefore, to 16,334,884 tons, of the value of £7,670,572. To this quantity may be added 200,000 tons of burnt ore from cupreous pyrites, and 324,175 tons of iron ore imported, bringing the total quantity smelted up to 16,859,064 tons. There were 673 furnaces in blast, namely, 429 in England, 117 in Wales, 127 in Scotland. There were 6,627,179 tons of pig iron produced in Great Britain in 1871: 4,379,370 tons in England; 1,087,809 tons in Wales; 1,160,000 tons in Scotland.

This total, estimated at the mean average price at the place of production, would have a value of £16,667,947. There were 34,165 tons of pig iron made in Northumberland; 759,244 tons in Durham; 1,029,885 tons in the North Riding of Yorkshire, and 114,549 tons in the West Riding; 270,485 tons in Derbyshire; 520,359 tons in Lancashire; 336,569 tons in Cumberland; 129,467 tons in Shropshire; 268,300 tons in North Staffordshire; 725,716 tons in South Staffordshire; 60,512 tons in Northamptonshire; 30,122 tons in Lincolnshire; 99,997 tons in Gloucestershire; Wiltshire, and Somersetshire; 510,087 tons in Glamorganshire; 470,982 tons in Monmouthshire; 41,893 tons in Denbighshire; 30,086 tons in Brecknockshire; 34,761 tons by anthracite furnaces in South Wales. The list of mills and forges at work in Great Britain in 1871 includes 267 works, and shows 6841 puddling furnaces and 866 rolling mills. There were 19 works in Great Britain having Bessemer converters in 1871; the number of converters at these works varied from 2 to 18, and the capacity of the converters from 3 to 10 tons. It is estimated that there were 2,398,293 boxes of tin, terne, and black plates made in the United Kingdom in 1871.

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Hardware Trade Report.—Under this heading is given a full and complete report of the condition of the Trade for the week, noting everything that can be of use or interest to either the manufacturer or dealer. We give all changes in discounts as soon as they occur, and print the particulars of almost all changes in lists. A great deal of labor is given to this department, which we are steadily making more complete and valuable. We have proved the incorrectness of the opinion which has largely prevailed, that it was impossible to give a report of the Hardware Market that would be of any use to buyers. On the contrary, in every State of the Union, numbers of the best Hardware men consider it indispensable.

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Editorials.—In our discussions of current matters of interest to the trade, *The Iron Age* aims to be liberal in its views, exact in its information, and careful in the expression of opinions; never intolerant of the opinions of others, but never influenced in forming its own by any considerations other than a desire to establish the truth and refute error, to perpetuate a wise and beneficent system of protection under an equitable and well-digested tariff on imports, and to promote the welfare of the great productive industries of the country.

Illustrated Articles.—The department of New Patents is an important feature. Specifications and drawings of all patents relating to metallurgical processes, metal working, &c., are promptly forwarded to this office from Washington, and appear as promptly in our columns, with such illustrations as may be necessary to a full understanding of the nature, application and utility of the inventions. These patents, of great interest to iron masters and metal workers in all departments, are given in no other journal, and our enterprise in securing and publishing them at great expense, owing to the cost of the engravings, has been fully appreciated.

We also publish, with illustrations, descriptions of new and useful articles of hardware, improved metal working machinery and important engineering structures; and, when necessary, illustrate our special articles with choice cuts.

Business Items, of interest to the trade, are collected from all sources, and form a very attractive and useful feature of each issue.

Miscellaneous Articles.—The uniform excellence of the reading matter of *The Iron Age* has been, from the first, one of its strongest claims upon the favor which it has enjoyed. Nothing of interest and importance to metal workers or metal dealers fails to receive due notice in its columns, and our ample space affords opportunity for the publication, or reproduction, of many important papers, reports, &c., for which no other American journals find room. A large amount of interesting matter is furnished weekly by our own writers and contributors, and our large and well-chosen list of exchanges enables us to give selections from the best journals and periodicals of this country and Europe. Our translations from the latest German and French newspapers and standard publications will be found especially valuable.

Scientific and Technical Notes.—This department, added during the past year, presents in condensed form the latest and most interesting scientific discoveries, experiments and inventions, and enables the reader to acquaint himself with the current scientific progress of this and other countries.

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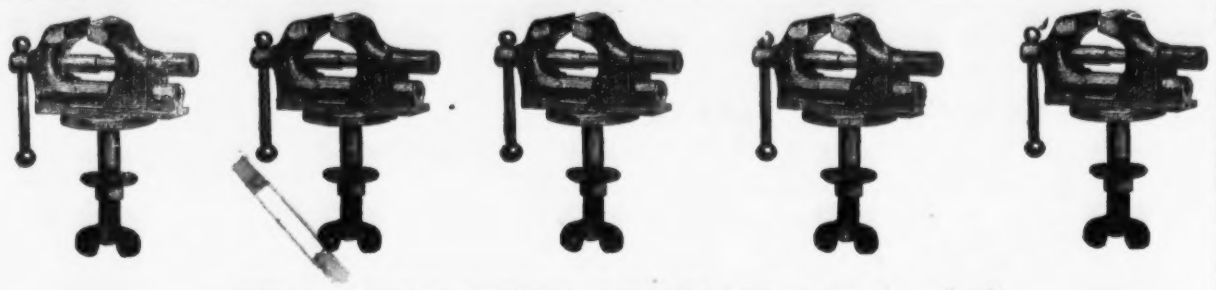

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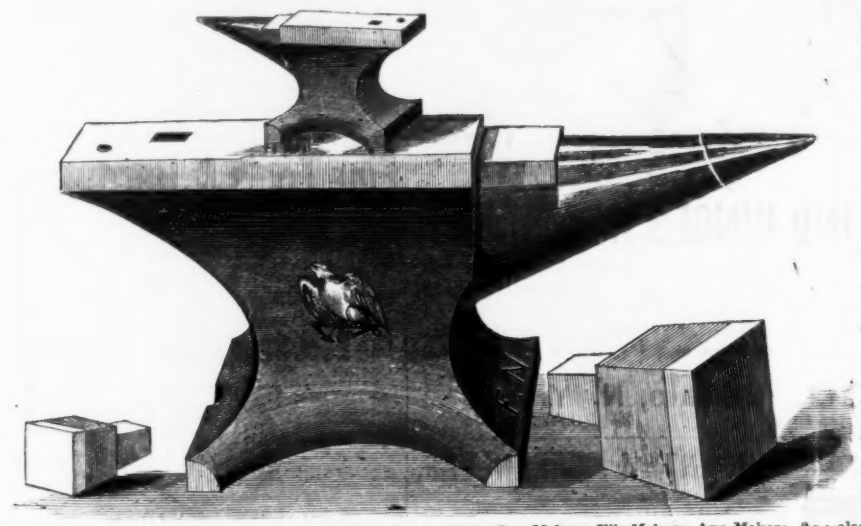

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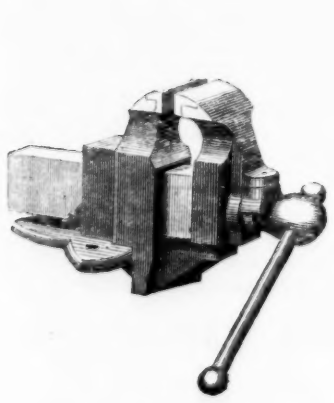

Fig. 1.

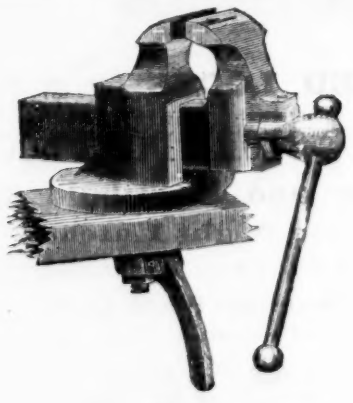

Fig. 2.

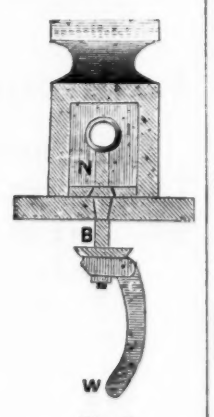

Fig. 3.

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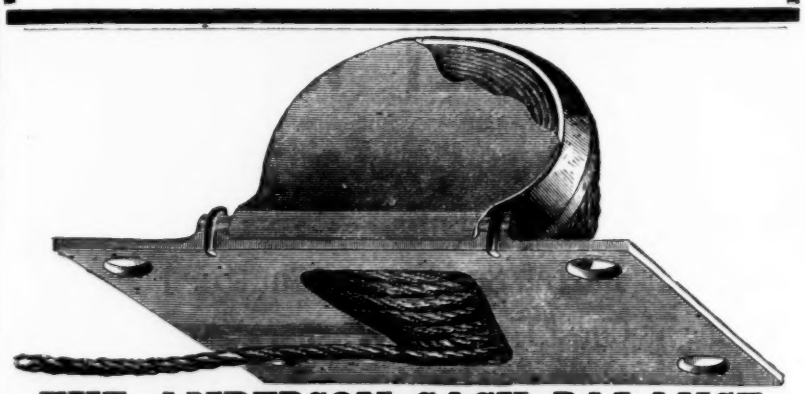

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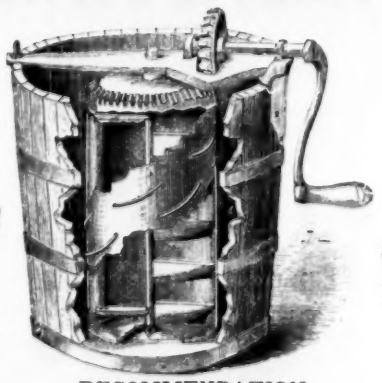

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16, 20, 24, 32, 40 quart.

RECOMMENDATION.

Messrs. SIDNEY SHEPARD & CO., Buffalo, N. Y.

Gentlemen: In reply to your inquiry, "How do you like our *Champion Freezer*?" would say, I have tried all the different kinds of freezers in the market, but found none to answer my vants, consequently I had one made at an expense of over two hundred dollars, that suits me. Your *Champion* embraces all the good qualities contained in my own, and I consider it the best I have seen. Yours, respectfully,

BUFFALO, Sept. 5th, 1872. J. MAYER, CONFECTIONER, No. 386 Main Street.

Samples, Illustrated Catalogue and Prices of our own Manufactures supplied on application.

MANUFACTURED EXCLUSIVELY BY

SIDNEY SHEPARD & CO., Buffalo, N. Y.

Hardware.

ROY & COMPANY,

West Troy, N. Y.,

Manufacturers of

Wrought Iron Butts, Strap and T Hinges,

PLATE AND HOOK HINGES,

Cold Pressed Nuts and Washers, Felloe Clips, &c.

JOHN L. FISHER, Agent, 98 Chambers Street, New York.

SPEAR & JACKSON,

Sheffield, England,

MANUFACTURERS OF

Saws, Files, Edge Tools and Steel.

JOHN L. FISHER. Agent,

98 Chambers Street NEW YORK.

F. WIEBUSCH,

IMPORTER OF

German, Sheffield and Birmingham

HARDWARE AND CUTLERY, CHAINS AND ANVILS,

No. 84 Chambers Street, N. Y. Office at Sheffield, No. 1 Arundel Lane.

Agent for WM. WILKINSON & SONS, Sheep Shears and Hedge Shears.
do THEILE & QUACK, German Hardware and Cutlery.
do GEO. FISHER & CO., Files.
do HENRY WALDRON, English Grain and Grass Scythes.
do J. D. THEILE, Chain.
Headquarters for PETER WRIGHT'S Anvils and Vises.
do JOHN WILSON'S Butcher Knives.
do W. & S. BUTCHER'S Files, Edge Tools and Razors.
Also, Manufacturers of "MONUMENTAL" and "TYLER" Pocket Cutlery.

HERMANN BOKER & CO.,

OFFICES AND WAREHOUSES:

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.
REMSCHEID and SOLINGEN (Prussia.)
SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ARTHUR LEE.
LIEGE (Belgium), Represented by Mr. LOUIS MULLER.

Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**

Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, &c.

Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
John Wilson's Butcher and Shoe Knives.
Peter Wright's Anvils. Also,
Spiegel Iron and Puddled Steel Scrap for Cast Steel Manufacture.

STANLEY WORKS,

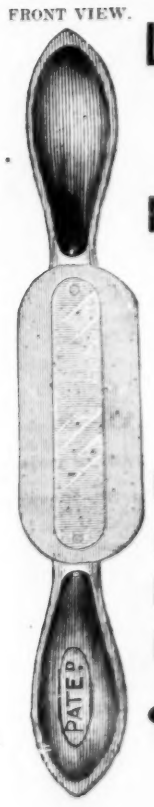
MANUFACTURERS OF

Wrought Butts, Strap and T Hinges.
Bronzed Butts and Bolts.
Wrought Barrel, Square and Shutter Bolts.
Wrought Chest Handles, Washers, Flush Bolts, &c

58 BEEKMAN STREET, NEW YORK.

Factory at New Britain, Connecticut.

FRONT VIEW. BACK VIEW



LLOYD, SUPPLEE & WALTON,

WHOLESALE

HARDWARE HOUSE,

AND

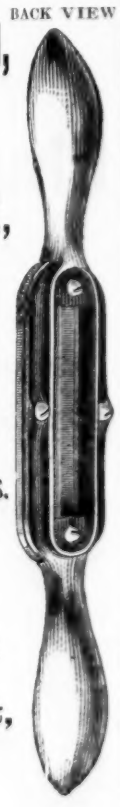
HARDWARE FACTORS.

BATES' MANUFACTURING CO.'S GOODS.

Bonney's Pat. Hollow Augers & Spoke Trimmers.
Bonney's Patent Double-Edged Spoke Shave.
Bonney's Patent Adjustable Gate Hinge.
Bonney's Patent Sash-Fast and Lamp Bracket.

625 Market Street,

PHILADELPHIA.



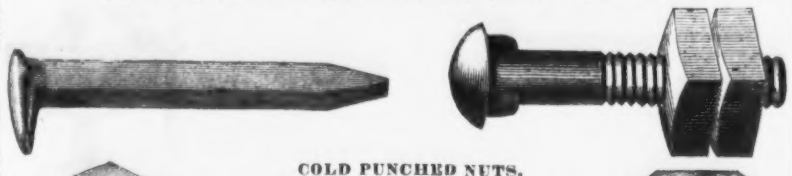
Hardware.

PRATT & CO.,

BUFFALO IRON and NAIL WORKS, Buffalo, N. Y.

Manufacture Bar, Angle, and Plate Iron, Spikes and Nails, Railroad Fish Plates, Bolt and Spikes, Railroad and Contractors' Supplies in general, Bolt Blanks, Coach Screws "Adams Nut Lock."

Plates Punched and Cut Hot. Bolts and Spikes, Superior Stock



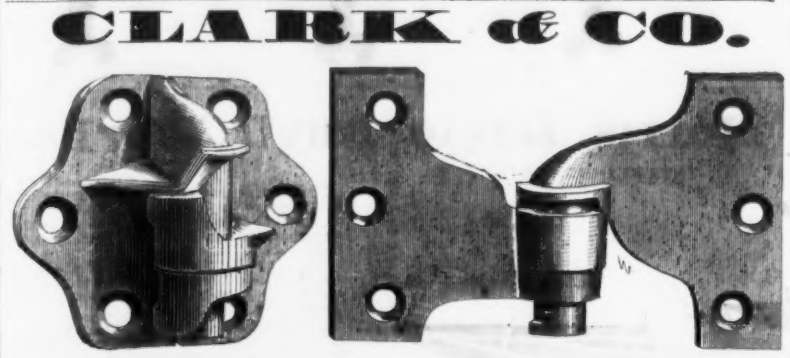
COLD PUNCHED NUTS.

All sizes constantly on hand. We use the best Lake Superior Iron, and make a uniform handsome nut. Orders solicited. We make washers a specialty. Also

DRAG TEETH.

Forged points and beveled heads. A desirable article. Orders for early spring delivery solicited.

CLARK & CO.



Surface. *Patented Nov. 3, 1868.* *Mortise.*

THE STRONGEST BLIND HINGES IN MARKET.

Upper and Lower Hinges are alike, locking the top and bottom of the Blinds.

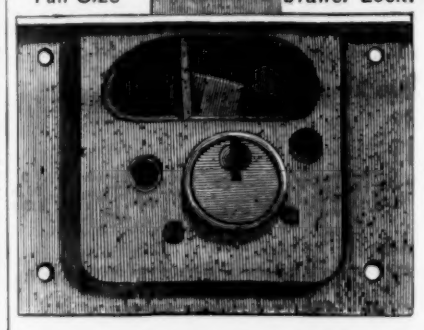
On long Blinds three or more may be used without mismatching sets, and all will fasten. They cannot be broken or closed by the wind.

☞ We would call the attention of the trade to our **Improved Revisible Self-Closing Gate Hinges.** Also our **Improved Axle Pulleys, both Iron and Boxwood Wheel, Sash Locks, Sash Bolts, &c.**

CLARK & CO., Buffalo, N. Y.

Send for Illustrated Catalogue and Price List

Full Size Drawer Lock.



SARGENT & GREENLEAF,

Manufacturers of

PAD LOCKS.

Drawer, Trunk, House, Store Door, and other Locks,

NIGHT LATCHES, &c, with Small Flat Keys

ALSO,

BANK and SAFE LOCKS.

J. W. WHITEHEAD, Agent,

55 Chambers St., NEW YORK

Send for Price List.

YALE LOCK MFG. CO.

Office and Works at STAMFORD, Conn.

FULL SIZE OF KEY.

Salesroom No. 1 Barclay New York,

FINE FLAT-KEYED LOCKS for all Purposes

RIM and MORTISE STORE DOOR LOCKS,

Heavy Front Door and Vestibule Locks.

Rim and Mortise Night Latches,

CLOSET, CHEST, DRAWER, DESK and PADLOCKS,

Post Office Lock Boxes and Prison Locks,

Leeds' Gate Fixtures, Field's Shutter Bars, etc., etc.

The Yale Lock Manufacturing Co.,

STAMFORD, CONN.

The Best TUMBLER LOCK Ever Made.

New Pattern Key.
No. 500 Yale Lock.

Samples sent on Application

COFFIN TRIMMINGS,

MANUFACTURED BY

WAYNE HARDWARE CO.,

124 Main Street, CINCINNATI, O.

BUCK BROTHERS, Millbury, Mass.

LARGEST STOCK AND BEST ASSORTMENT IN THE UNITED STATES OF

SHANK AND SOCKET FIRMER CHISELS.

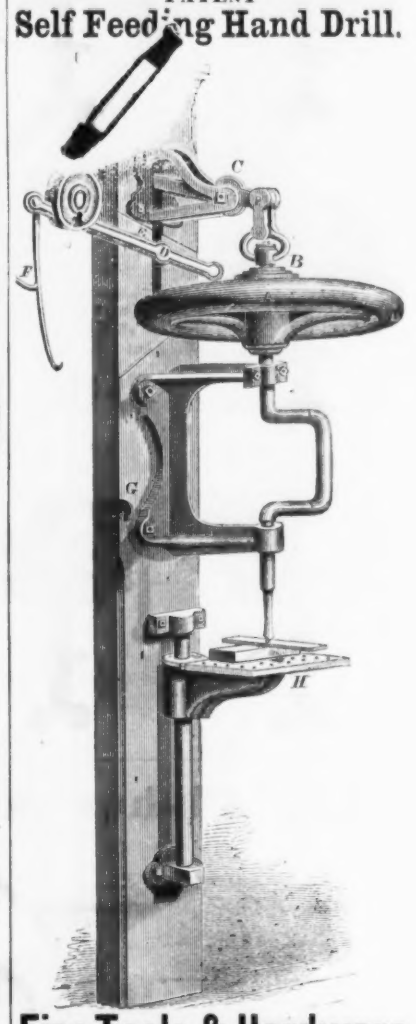
Also, BEST QUALITY SOCKET FRAMING CHISELS.

Hardware.

BIDDLE MANU'FG CO.

PATENT

Self Feeding Hand Drill.



Fine Tools & Hardware Specialties.

Warerooms,

78 Chambers Street, N. Y.

Send for catalogue.

The Peck Stow & Wilcox Company,

Manufacturers of

TINSMITHS' TOOLS AND MACHINES,

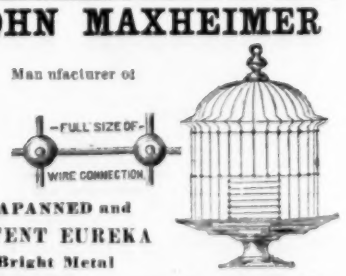
COFFEE MILLS, CARRIAGE BOLTS, STEELYARDS, COMPASSES, DIVIDERS, RIVETS,

and a large variety of **GENERAL HARDWARE.**

97 Chambers Street, N. Y.

JOHN MAXHEIMER

Man ufacturer of



JAPANNED and PATENT EUREKA Bright Metal

BIRD CAGES,

Nos. 247 & 249 Pearl Street,

NEW YORK.

JOSEPH CHURCHYARD,

Proprietor of the

Buffalo Bellows Factory & Planing Mill

Clinton St., bet. Adams and Watson Sts.,

BUFFALO, N. Y.

Keeps on hand (or makes to order)

DOORS, SASH, MOULDINGS,

Shutters, Stairs, Blinds, Flooring, Siding, in hard and soft woods. Estimates given (responsible persons) for any variety of wood work, either plain or ornate. Those in want of any thing in this line are invited to drop him a line and ascertain at what price he can furnish it.

New York Wholesale Prices, December 31, 1872.

HARDWARE.

Anvils

Solid Cast Steel ₱ lb 14c
Peter Wright's ₱ lb gold 12½c; over 250 lbs. 13c. gold
Armitage's Mouse Hole gold 12c
Wilkinson's ₱ lb gold 11½c
Eagle Anvil Co., ₱ lb 11 cts dis 15 @ 15&5 %

Apple Parers.

Turn Table, Lightning, Reading, Conqueror } $3·50 per dozen.
Union per doz. $8 00 @ 8 50
Bay State, Paring Coring & Slicing 13 50 @ 15 00
Skeleton " " " 8 00
Bay State Peach Parer 11 00 @ 11 50
Lightning Peach Parer 11 00 @ 11 50
Peach Stoner & Halver 6 00

Augers and Bits.

Snell Mfg. Co dis 15 %
Russell Jennings dis 10 %
Ives' dis 25 %
" Hollow Augers dis 30 %
" Expansive " dis 30 %
" Expansive Bits dis 25 %
Andrews' Bitts dis 30 %
Cook's Patent Augers dis 40 %
" " Bits dis 25&10 %
Shepardson's Double Cut Bits dis 20 %
Griswold's Patent dis 20 %
Cast Steel Cut Augers new list dis 25&10 %
Cast Steel Auger Bits dis 25&10 %
Long Augers new list dis 30 %
Bonney's Patent Hollow $48 per doz.—dis 25 %
Stearns' Patent Hollow $48 per doz.—dis 30 %

Axes.

Blood's $12 50 @ 13 00
Hunt's ₱ doz 15 00 @ 17 50 net @ dis 5 %
Collins' ₱ doz 12 00 @ 16 00 net @ dis 5 %
Ten Eyck's ₱ doz 11 50 @ 12 50
Hurd's ₱ doz 12 50 @ 13 50
Simmons' ₱ doz 12 00 @ 13 00
Morris' ₱ doz 12 00 @ 13 00
Red Jacket ₱ doz 12 00 @ 12 50
Mann's ₱ doz 13 00 @ 14 50
Powell Tool Co., "Peerless" ₱ doz 13 00 @ 14 50

Balances.

Chatillon's, Frary's, Morton's } new list, dis 15 %

Bands.

Plated add 10; dis 5 %
Iron dis 5 %
Brass....(Plated list) dis 5 %
Oroide add 25; dis 5 %

Bells.

Hand, Light Brass dis 50&10 %
White Metal dis 45&10 %
Globe dis 20 %
Abbe's dis 10 & 10 %
Taylor's Patent Door net
Western Gong net
Brook's Bells
Crank net list.
Pull dis 15 %
Hart Mfg. Co., Crank and Pull net list
Cow—Common Wrought new list dis 33⅓ %
Western new list dis 33⅓ %
Kentucky "Star" new list dis 10 @ 10 %
Dodge's Genuine Kentucky new list dis 25 %
Yaw's Genuine net

Bellows.

Blacksmith's dis 10 %
Moulders' dis 10 %

Blind Fasteners.

Van Sand's ₱ gross $14 00
Washburn's Patent ₱ gross 14 00
Merriman's add 35 @ 40%

Blind Staples.

Boardman's Patent, ⅛ in. and larger ₱ lb 37½c
" ⅜ in. " 42 c

Bolts.

Cast Iron Barrel, Shutter, &c dis 30&10 %
Wrought Iron Barrel net
" " Square dis 10&10 %
Carriage and Tire, Common dis 50&10 @ 60 %
Carriage and Tire, Norway Iron dis 45 %
Eagle, Philadelphia dis 35 %
Carriage and Tire, R. B. & W. dis 45&5 %
Plow, R. B. & W. dis 25 %
Union Nut Co. dis 50 %
Machine dis 10 @ 15 %

Boring Machines.

Kellogg's dis 10 @ 15 %
Snell Mfg. Co., Rice's Patent dis 15 %
Snell Mfg. Co., Regular dis 15 %
Douglas Mfg. Co. dis 20 %
Hovey's Angle $6 00 @ 6 25
Hovey's Upright 4 25 @ 4 50
Morticing Machines, each $18 00

Braces.

Barber's Patent dis 30&10 %
Wilson Mfg. Co. net @ add 5 %
Spofford's Patent dis 37½ %
Noble's Patent dis 33⅓ %
Bartholomew's dis 10 %
Bartholomew's Patent dis 25 %

Bung Hole Borers.

Common and Ring dis 20 %
Enterprise Mfg. Co dis 20 %
Ives' Tap Borers dis 20 %

Butchers' Cleavers.

Bradley's dis 15 %
Beatty's new list dis 10 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co. dis 15 %

0	1	2	3	4	5	6
$13·00	$16·00	$18·00	$20·00	$23·00	$26·00	$30·00

Butts.

Wrought Brass new list dis 25 %
Cast Fast Joint Narrow dis 15 %
" " " Broad dis 30 %
Cast Loose Joint dis 40 %
" " " Mayer dis 30 %
" " " Parliament dis 30 %
Loose Pin Butts, Plain dis 25 %
" " Japanned dis 25 %
" " National dis 40 %
Wrought Fast Joint, Narrow net
Wrought Broad dis 15 %
" Loose dis 15 %
Wrought Table and Back Flaps net
Palmer Blind Butts dis 30&10 %
Nicholson Blind Butts dis 25 %
Parker's Blind Butts dis 25 @ 30 %
Clark's Blind Butts dis 25 @ 30 %
Seymour's dis 25 @ 30 %
Shepard's dis 25 @ 30 %
Garretson's dis 40 %
Standard dis 30 %
Union Mfg. Co.'s Drilled Fast Narrow net
" " " " " Broad dis 25 %
" " " " " Loose dis 35 %
Whitney & Wait's Bronze Metal dis 25 %

Caps—Percussion per 1000.

G. D. 40c
Ely's E. B. 1-4s, 67½c; 1-10s, 75c, gold
" Double Waterp'f, 1-4s, $1·57½; 1-10s, $1·65c, gold
Colt's 1-4s, 82½c; 1-10s, 90c, gold

Cartridges.

Metallic dis 40 %

Cards.

Horse and Curry dis 20&10 %
Cotton and Wool dis 10 %

Casters.

Iron and Wood Wheel Plate dis 20&10 %
Brass Wheel Plate dis 10 %
Porcelain Wheel Plate dis 30&10 %

Chain.—By the Cask.

English Coil net gold

₱ lb.	13¼	10¼	9½	9c	8¼	8½
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2 ₱ pair, gold, 65c
Trace, 7-10-2 ₱ pair, gold, 70c
Galvanized Pump Chain ₱ lb 14c
German Halter Chain new list, gold, dis 10 %
German Coil new list, gold, dis 10 %
Jack Chain, Iron dis 35 @ 40 %
" " Brass dis 20 @ 25 %

Cherry Seeders.

₱ doz. $9 00

Chalk.

White ₱ gross, 50c
Red ₱ gross, 75c
Blue ₱ gross, 85c
Crayons ₱ gross, 14c

Chisels.

Socket Firmers dis 60 %
Socket Framing dis 60 %
Socket Corner dis 60 %
} Cash in 30 days an extra 5 %
Tanged Firmers dis 40 @ 40&10 %
Butcher's $5 00 to £ gold—new list
Spear & Jackson's $5 00 to £ gold—new list

Clips, Axle.

Norway or Best dis 20 @ 30 %
Superior dis 40 %

Coal Shovels.

Iron Handled ₱ doz, $ 85 @ 1 25
Wooden Handled ₱ doz, 1 00 @ 2 00

Cocks.

Brass Racking, Lock& Globe dis 10 %

Coffee Mills.

Common Board and Box dis 15 %
Better Grades dis 10 %
Increase Wilson's new list dis 10 %
French Steel dis 10 @ 20 %
"Champion" dis 20 %

Compasses and Dividers.

Bemis dis 15 @ 20&5 %
Excelsior dis 30 %
Peck, Stow & Wilcox dis 20 %

Coopers' Tools.

Bradley's dis 15 @ 20 %

Corn Knives and Cutters.

Bradley's list net

Curry Combs.

Hotchkiss' and Kellogg's, Iron and Brass dis 10 %
5 bbl. lots, dis 10&5 %; 10 bbl. lots, dis 10&10 %
Fitch's dis 20 %
Ruggles' dis 15 @ 20 %
Rubber ₱ doz., $9 00—dis 10 %

Curtain Pins.

Silvered Glass dis 40&10 %

Cutlery.

American Table
American Pocket dis 15 %

Door Springs.

Torrey's Patent $7 50 ₱ doz—dis 20&10 %
J. Palmer ₱ doz $5 50

Drawing Knives.

dis 60 %—Cash in 30 days an extra 5 %
Bradley's dis 25 %

Drills.

Morse's Bit Stock Drills dis 10 @ 15 %
Ingersoll's Ratchet (Wrought Iron) dis 25 %
No. 1, 12-in., $6 50 each; No. 2, 16-in., $8 75 each; No. 3, 20-in., $11 00 each.

Egg Beaters.

Monroe's ₱ doz net $8 25 @ 8 50
Ashley's ₱ doz net 2 25 @ 3 60
Earle's Patent ₱ doz net 5 50 @ 6 00
Pratt's Aerating dis 10 %
Dover ₱ doz net $6 00

Emery.

Genuine Chester—Regular Nos. ₱ lb 8c
" Flour and FF ₱ lb 5c
Washington Mills—Regular Nos. ₱ lb 8c
" Flour. ₱ lb 5c

Enameled and Tinned Ware.

Kettles dis 10 %
Sauce Pans, Glue Pots, &c dis 5 %

Faucets.

Cork Lined, Wood dis 50 @ 50&10 %
Fenn's dis 50 %
" Cork Stops dis 40 %
Star dis 57½ %
Frary's Patent Petroleum dis 10 & 10 %
Taylor's Pattern Petroleum dis 20&10 %
Wood and Metallic" dis 40 %

Files.

American Best $5 00 to £ net
Nicholson—Mill $5 00 to £ net
" Others 5 00 to £ net
" Tapers (single cut) 5 00 to £ net
Moss & Gamble's $5 25 @ 5 75 to £ gold
J. & Riley Carr's, $5 50 to £ gold
Stubs' $8 00 @ 8 25 to £ gold
Butcher's $5 50 to £ gold
Spear & Jackson's 5 50 to £ gold
Hargreaves, Smith & Co.'s $4 75 to £ gold
Jowitt's 5 25 to £ gold
"Western" 5 00 to £ net
W. K. & C. Peace's "Imperial" $5 25 to £ gold
R. Ibbotson $5 00 to £ gold
Beam & Murray, "Cyclops" $4 85 to £ gold
Fisher,s $4 75 to £ gold
Goodlad's $4 00 to £ gold

Fluting Machines.

Acme $7 00 each net
Cole 5 75 each net
Peerless, No. 2 4 00 each net
Manvil, No. 2 7 00 each net
Knox, with 4-inch Rolls 5 00 each net
" " 6 " " 6 00 each net
O. K. 6 50 each net
Excelsior, No. 1 4 75 each net
" " 2 6 50 each net
Diamond 7 50 each net
Climax, 7-inch Rolls 8 00 each net
" 4½ " " 6 50 each net
Empire 4 00 each net
Eureka, No. 1, 7-inch Roll 8 00 each net
" No. 2, 5-inch Roll 6 00 each net
K. F. M., 4½ inch Roll 5 50 each net
" 6-inch Roll 6 00 each net
Carpenter's Self-Heating 13 50 each net
Fairy, Self Heater 12 00 each net
National, 5-inch Rolls 5 00 each net
Myer's Fashion Fluter, 4½ inch Rolls 3 00 each net

Fry Pans.

Tinned— dis 15 %

₱ doz	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·50
No.	0	1	2	3	4	5	6	7	8

Peck Stow & Wilcox dis 15 %

Hammers.

Maydole's new list net
Cheney's new list net
Verree dis 5 %
Yerks & Plumb new advanced list dis 5 @ 10 %

Handles.

Hammer and Hatchet dis 10 %
Quakertown, Axe, Pick and Sledge dis 10 %
" Hammer and Hatchet net

Harness Snaps.

Judd's dis 30 %
Fitch's dis 30 %

Hatchets.

Isaiah Blood dis 10 %
Shingling, Nos. 1 2 3 ₱ doz $7 50 8 00 8 50
Claw, " 1 2 3 ₱ doz 8 50 9 00 9 50
Lathing, " 1 2 3 ₱ doz 7 50 8 00 8 50
Hunt's net
Shingling, Nos. 1 2 3 ₱ doz $7 25 8 00 8 75
Claw, " 1 2 3 ₱ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ₱ doz 7 50 8 25 9 00
Hurd's dis 20 %
Shingling, Nos. 1 2 3 ₱ doz $8 00 8 50 9 00
Claw, " 1 2 3 ₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ₱ doz 8 00 8 50 9 00
Newark Edge Tool Co's dis 25 %
Shingling, Nos. 1 2 3 ₱ doz $6 50 7 00 7 50
Claw, " 1 2 3 ₱ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ₱ doz 6 50 7 00 7 50
Yerks & Plumb dis 10 %
Shingling, Nos. 1 2 3 ₱ doz 7 00 7 50 8 00
Claw, " 1 2 3 ₱ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ₱ doz 7 00 7 50 8 00
Simmon's dis 10 @ 15 %
Shingling, Nos. 0 1 2 3 ₱ doz 7 50 8 00 8 50 9 00
Claw, " 1 2 3 ₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ₱ doz 8 00 8 50 9 00
Broad, " 1 2 3 ₱ doz 9 00 10 00 12 00
" " 4 5 6 ₱ doz 14 00 16 00 18 00
" " 7 8 ₱ doz 20 00 22 60
J. P. Verree & Co dis 5 %
Shingling, Nos. 1, 2, 3 ₱ doz $6 98 7 35 7 87
Claw, " 1, 2, 3 ₱ doz 7 56 7 87 8 40
Lathing, " 1, 2, 3 ₱ doz 6 98 7 35 7 87

Hinges.

Wrought Strap and T net
Providence Plate 6 & 8 in. list 11c; over 8 in. " 9½c dis 5 %

Hoes

Solid Shank, C. S. ₱ doz $8 00—dis 25 %
Socket, C. S. ₱ doz 9 00—dis 25 %
Riveted Eye ₱ doz 5 00—dis 25 %
Planters'—Winsted add 10 %
Scovill add 33⅓ %
Scovill Pattern (Winsted) add 20 %

Hooks.

Belt dis 50 %
Bench ₱ doz net $5 00 @ 8 50
Wardrobe, Japanned dis 10&5 %
Hat and Coat " dis 10&5 %
Wrought Staples and Hooks and Staples dis 60 %
WroughtHasps and Staples and Hasps, Hooks and Wrought Staples dis 60 %
Screw Hooks and Eyes, revised list dis 60 %

Horse Nails.

Putnam's.

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots 1000 lbs. dis. 5 %.
Aussable.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs. 5 % discount.
Brundage.

No.	5	6	7	8	9	10
	29	26c	24c	23c	22c	21c

In lots of 500 lbs., dis 5 %
American Pressed.

No.	5	6	7	8	9	10
	24c	22c	22c	22c	22c	22c

In lots of 1000 lbs. 2 cts. less per lb.
Buffalo Forged.

No.	5	6	7	8	9	10
	30c	28c	27c	26c	25c	

In lots of 1000 lbs. less 1c. per lb.; lots of 5000 lbs. less 2c.per lb.
Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs., dis 5 %.
Vulcan.

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs., 7½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
WB.	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis. 5 %.
Star Brand ₱ lb 16c
Morgan 16 c

Horse Shoes.

Burden ₱ keg, $6 85
R. I. Horse Shoe Co., Perkins' Pattern ₱ keg, 6 85
" " R. I. Pattern ₱ keg, 7 35
Mule Shoes ₱ keg, 7 85

Kettles.

Enameled dis 10 %
Brass ₱ lb 55c
In lots of 500 lbs. ₱ lb net 50c

Knives.

Butcher and Shoe, "Ames'" dis 15 %
Hay and Straw, "Wadsworth's" dis 15 %

Knobs.

Mineral and Porcelain, Trenton Lock Co } list June 8th, dis 25 %
Mallory, Wheeler & Co new list dis 40&2 %
Base—Common net
" Plush Tip dis 10 %
Elastic End reduced list..dis 10&10 %

Lanterns.

Brady's Patent dis 10 %
Ætna dis 10 %
Yankee dis 10 %
De Beque dis 10 %

Locks and Latches.

Russell & Erwin Mfg. Co., Norwalk Lock Co., Branford Lock Co., Parker & Whipple, Nashua Lock Co., Trenton Lock Co. } List of June 8th, Dis. 25 %
Mallory, Wheeler & Co revised list, dis 40&2 %
Pad Locks, (Mallory, Wheeler & Co) new list dis 40 %
Pad Locks, (R. & E. Mfg. Co). Revised list Sept. 10th, dis 40&2 %
Cabinet—Eagle dis 25 %
Cabinet—Gaylord dis 25 %
Trunk dis 15 %
Continental dis 15 %
Shepardsons dis 20 %

Meat Cutters.

Miles' Challenge Family dis 10 %

No.	1	2	3
₱ doz	$22 00	$30 00	$40 00

Dixon's (P. S. & W) dis 5 %

No.	1	2	3	4
₱ doz	$14 00	$17 00	$19 00	$30 00

Hales' dis 10 %

No.	11	12	13
₱ doz	$27 00	$33 00	$42 00

Eddy's dis 10 %

No.	50	55	60
₱ doz	$25 00	$30 00	$40 00

Perry's Champion (P. S. & W) dis 5 %

No.	290	300	400
₱ doz	$22 00	$27 00	$46 00

Woodruff's (P. S. & W) dis 5 %

No.	100	150
₱ doz	$15 00	$18 00

American dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.

Stebbins' Pattern dis 50&10 %
Tinned ends dis 40&10 %
Weed's Patent Self-Boring dis 15 %
" without Auger Bit dis 40 @ 50 %
Patent Self-Measuring per doz $42 00—dis 20 %

Mouse Traps.

Wood Choker 20 @ 24c ₱ doz holes

Nails.

10d Cut (Standard) nominally, ₱ keg $5 50

Nuts and Washers.

3c off list

Oil Stones.

Washita No. 1 ₱ lb 22c @ 35c
Washita Slips ₱ lb 44c @ 50c
Hindostan ₱ lb 6c net
Hindostan Slips ₱ lb 10c net

Oilers.

Olmsted's dis 25&10 %
Broughton's dis 25&5 %
Common Zinc, Brass and Copper dis 20 %

Picks.

Washoe R. R. Nos.	0	1	3	3	4	5
per doz.	$14·00	15·00	16·00	17·00	18·00	
Washoe Coal, "	$8·50	9·00	10·00	11·00	13·00	15·00

Picture Nails and Knobs.

Richards' Patent dis 40 @ 40&10 %

Planes.

Auburn Bench and Fancy dis 15 %
Bailey's Patent Adjustable dis 15&10 %
Howland's Bench and Fancy dis 15 %
Chapin's " " dis 15 %
Chapin's, 2d quality dis 15&5 %
Sandusky Tool Co. dis 15 %
Ogontz" dis 15&5 %
Plane Irons list net
" " Butcher's $5 00 to £ gold—new list
" "Spear & Jackson's $5 00 to £ gold—new list
" " Sandusky Tool Co dis 5 %

Pumps.

Douglas Cistern, etc dis 15 %
" S. & F. dis 10 %

Rakes.

Cast Steel dis 25

$8 00	$9 00	$10 00	$11 00
8	10	12	14 teeth.

Razor Straps.

Genuine Emerson (B. F. Badger) dis 40&10 %
Hunt's dis 25&10 %
Chapman dis 10 @ 15 %

Rivets.

Iron and Tinned dis 25 %
Copper Rivets and Burrs net @ dis 10 %

Rods.

Stair new list dis 25 %
American Patent dis 25 %

Rope.

	Manufacturers' List.
Manila ½ inch and larger	₱ lb 18½c
" ⅜ inch	₱ lb 18c
" ¼ & 5-16 inch	₱ lb 19½c
" Lath Yarn	₱ lb 18c
" Hay Rope	₱ lb 19c
Jute	₱ lb 12c
Sisal ½ inch and larger,	₱ lb 16½c
" ⅜ inch	₱ lb 17c
" ¼ & 5-16 inch	₱ lb 17½c

Rules.

Boxwood and Ivory dis 30&10 %

Sad Irons.

₱ lb 5½ @ 6c
Myer's Hat and Toilet, with stand per doz $7 00

Sand Paper—dis 7½ @ 10%

Beader & Adamson's (Flint) 00 to 1½ $4 50 ₱ ream
" " " 2, 2½&3 5 00 "
Assorted 4 50 "
Star ₱ ream $3 50
Emery ₱ ream $7 00 @ 12 00

Sash Locks.

Clark's dis 25 @ 30 %
Ferguson s dis 20 @25 %
Champion per gross $13 00 @ $15 00
Norwich dis 15 %

Sash Weights.

Solid Eyes ₱ lb 3¼c

Sausage Fillers.

Perry's (P. S. & W) dis 5 %

No	1	0
₱ doz	$15 00	$21 00

Saw Rods.

list net

Saws.

Spear & Jackson's $4 50 to £ gold
John Spear $3 60 to £ gold
Am. Saw Co new list
Inserted Tooth dis 10 %
All else dis 12½ %
Disston's
H. W. Peace s Circulars dis 10 %
Other kinds dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular new list dis 10 %
Lightning new list dis 20&12½ %
Electric dis 25 %

Scales.

Fairbanks' new list dis 15 @ 20
Howe's dis 15&5 %
Shattuck's Counter and Union dis 15 %
National Platform dis 25 %
Eureka dis 25 %
Scale Beams dis 20 %
No. 1 300 to 1200 lbs. 90c. ₱ cwt
No. 2 " " 75c, ₱ cwt

Screws.

American and National Screw Cos.
Iron revised list dis 50 %
Round Head Iron dis 40 %
Brass dis 40 %
Round Head Silver Capped new list dis 20 %
Patent Gimlet Point Coach and Hand Rail dis 10 %

Scythes.

Blood's German Steel, Grass ₱ doz $10 00
" Cast " " ₱ doz 11 00
" Silver " " ₱ doz 12 00
" German " Grain ₱ doz 14 00
" Cast " " ₱ doz 15 00
50 doz lots—50 cts. off the above price.
Johnson's German Steel, Grass ₱ doz 9 25
" Cast " " ₱ doz 10 50
" German " Grain ₱ doz 12 00

Shears.

Cast Steel new list dis 60&7½ @ 65 %
Seymour's new list dis 50 %

Shovels and Spades.

Ames list July 1, '70, list net @ dis 2½ %
Rowland list Feb. 17, '72, dis 5 %
Old Colony dis 2½ %

Shovels and Tongs.

Iron Head list net
Brass Head dis 5 %
Polished Steel new list dis 15 %

Slates.

Square Frames, R'd Corn'd, by case dis 60&10 %
Less than a case dis 50 @ 55 %
Oval Frames, by case dis 40 @ 40&10 %
Less than a case dis 30 %

Spoons.

Iron new advanced list dis 10
By the case dis 20;
Britannia dis 20,
Plated A 1 dis 25&5 %
German Silver add 5 %

Stocks and Dies.

dis 15 @ 20 %

Stove Polish.

Joseph Dixon's ₱ gross $6 00 @ 6 25
Gold Medal ₱ gross $5·50

Squares.

Steel net; full cases, 10 %
Iron old list net; full cases, 10 %
Nickel Plated add $2 50 @ $4 00 ₱ doz net
Try Squares and T Bevels dis 35&10 %
Star Try Squares and Bevels dis 20 %

Tacks.

Full Weight American Iron dis 40&7½ %
Half Weight American Iron dis 70&7½ %
Carpet dis 7½ %
Brads American dis 50&7½ %

Finishing Nails	½	⅝	¾	⅞	1 in. and over
₱ lb	25	20	17	14	12½c dis 7½ %

Trunk and Clout	½	⅝	¾	⅞	1 in. and over
₱ lb	25	20	17	14	12½c dis 7½ %

Copper Tacks ₱ lb 56c—dis 7½ %
Iron Shoe Nails, ₱ lb 4-8 and longer, 10c; 3½-8, 10½c dis 7½ %
Double Pointed new list dis 33⅓ %

Tapes, Measuring

American Flask and Cap Co dis 20 %
Eddy's dis 10&10 %

Toe Calks.

per lb 13c

Tobacco Cutters.

Champion dis 20 %
Peck, Stow & Wilcox dis 10 %

Traps.

Newhouse dis 17½ %
Hotchkiss dis 20 %
Peck, Stow & Wilcox dis 30 %
Blake's Patent dis 15 @ 20 %

Vises.

Trenton Vises, Solid Box.
30 to 110 lbs. 17c
111 to 160 lbs. 18c
160 and over 21½c
Peter Wright's ₱ lb 16c. gold
Wilson's Solid Box dis 10 %
30 to 160 lbs. 18c
160 and upward 21c
Jameson's Parallel dis 25&15 %
Backus, Parallel dis 25&10 %
Union, Parallel dis 25%
Buffalo, Parallel new list dis 15 %
Fisher & Norris' Double Screw Parallel dis 20 %

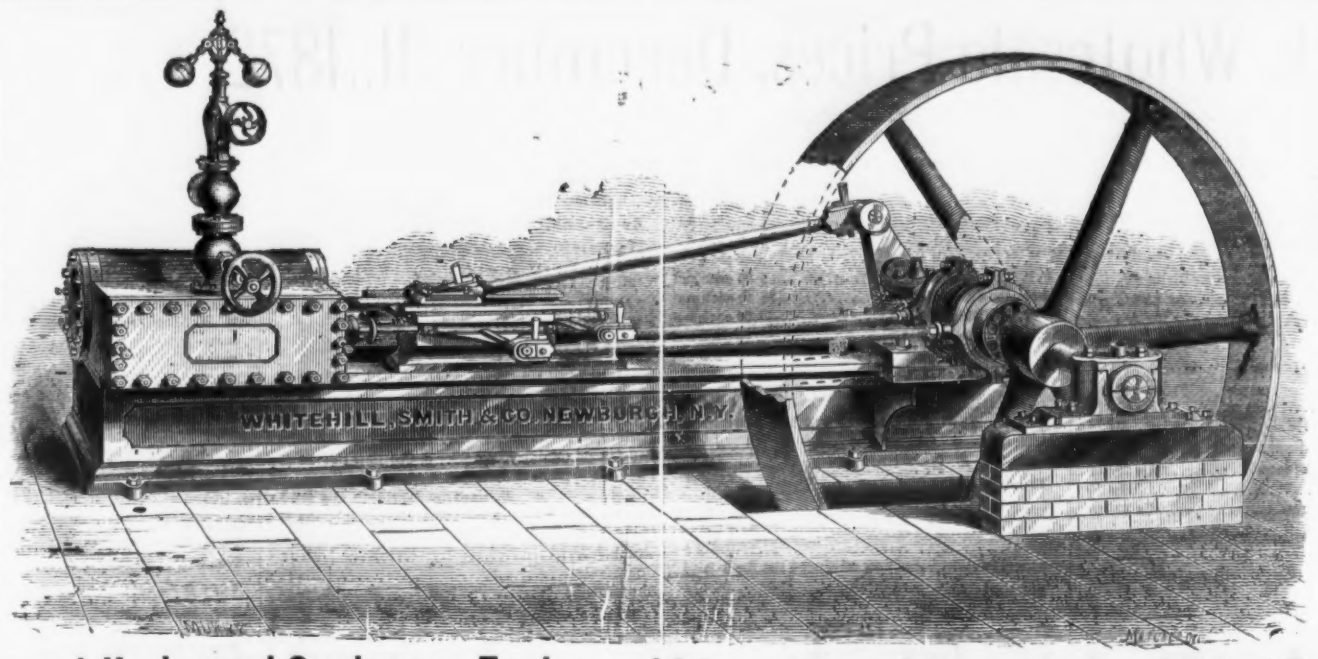
Wire.

Bright and Annealed Nos. 0 @ 18 dis 20 @ 25 %
" " Nos. 19 @ 26 dis 30 @ 35 %
" " Nos. 27 @ 36 dis 35 @ 40 %
Coppered Nos. 0 @ 18 dis 15 @ 20 %
Galvanized dis 35 @ 40 %
Tinned dis 15 @ 20 %
Cast Steel net @ 5 %
Tinned Broom Wire dis 20 @ 25 %
Galvanized Telegraph, Nos. 8 & 9 ₱ lb 10 @ 11c
" " " 10 & 11 ₱ lb 11 @ 12c
" " " 12 ₱ lb 11½ @ 12½c
Annealed Fence, Nos. 8 & 9 dis 20 @ 22½ %
" Grape, " 10 to 14 dis 20 @ 22½ %
Fence Staples ₱ lb 10c

Wrenches.

Baxter's Adjustable "S" dis 20 %
Baxter's Diagonal dis 20 %
Collins & Co.'s new dis list 30 %
Coes' Genuine dis 30 %
Coes' Pattern (Wrought) dis 45 %
" " (Malleable) dis 50 %
Lindsay's Patent dis 35 %
Taft's Pattern dis 60&15 %

Circular and Prices Furnished on Application.



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We are making a *specialty* of the above Engines, and are enabled to furnish them at LOW PRICES.

We have on hand at all times a number of sizes *finished complete*, ready for delivery; and also a portion of each size—Cylinders, &c. (finished)—enabling us to furnish complete and deliver any size on very short notice.

All of the parts are of the *best material* and *workmanship*. *The Main Journals run in Brass Boxes; Cross Head has Brass Gibs; Piston Rod and Crank Pin of Steel; Force Pump, Oil Cups, Regulating Governor, and Steam Stop-Valve, Balance Pulley or Fly-Wheel.*

Manufactured by **WHITEHILL SMITH & CO.**, Newburgh, N. Y. Warerooms, 38 Cortland St., **E. P. HAMPSON**, Gen'l Agent.

BUY SWAIN TURBINE WATER-WHEEL.

WHY?

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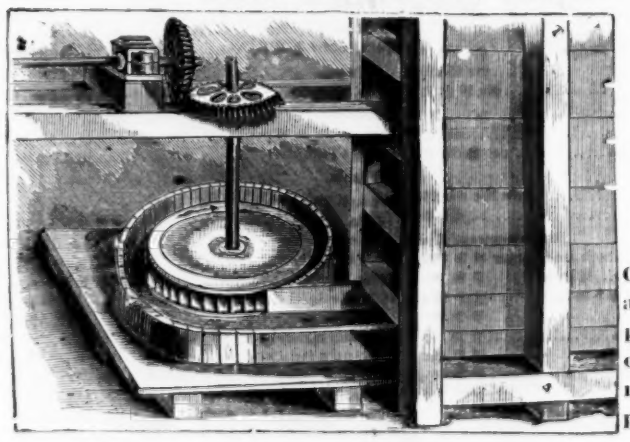

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Giving as good a percentage of power as any other and at much lower price.

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Cast, Fast & Loose Butts,

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☞ Fine Castings a Specialty.

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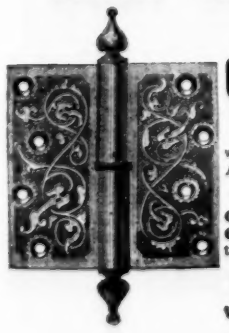

ERIE RAILWAY.

WINTER ARRANGEMENT of Trains taking effect Nov. 4th, 1872. From Chambers St. Depot. (For 23d St. see note below).

9·00 A. M. Cincinnati and Chicago Day Express. Drawing Room Coaches to Buffalo and Niagara Falls, and Sleeping Coaches to destination.

11·00 A. M. Express Mail for Buffalo and Niagara Falls. Drawing Room Coach to Susquehanna and Sleeping Coaches to destination.

5·30 P. M. Night Express. Sleeping Coaches to Buffalo and Niagara Falls.

7·00 P. M. (Daily) Cincinnati and Chicago Night Express. Sleeping Coaches through to Cincinnati, Buffalo, Niagara Falls, and thence to Chicago.

Additional Trains leave for

Newark, 6·30, *8·45 and 11·30 A. M., and 3·15, 5·15 and *6·30 P. M.

For Port Jervis, 8·00, 9·00, 11·00 and *11·15 A. M., 4·30, 5·30, *6·30 and *7·00 P. M.

For Goshen and Middletown, *7·30, 8·00, †8·30, 11·00 and *11·15 A. M., 3·30, 4·30, 5·30, *6·30 and *‡7·00 P. M.

For Warwick, 8·00, 11·00 and *11·15 A. M., 4·30 P. M.

For Newburgh, 8·00, †8·30, 9·00 and 11·00 A. M., 3·30, 4·30 and 5·30 P. M.

For Suffern, *7·30, 8·00, †8·30, 11·00 and *11·15 A. M., 3·30, 5·00, †6·30, 7·00 and *11·30 P. M.

For Ridgewood, Hohokus, Allendale, and Ramsey's, *7·30, 8·00, †8·30, 11·00, *11·15 A. M., 3·30, 5·00, 6·00, †6·30, 7·00 and *11·30 P. M.

For Paterson, 6·45, *7·30, 8·00, †8·30, 10·00, 11·00, *11·15 A. M., 12·00 M., *1·45, 3·30, 4·00, 5·00, 5·15, 5·30, 6·00, *6·30, *7·00, 8·00, 10·00 and *11·30 P. M.

For Rutherford Park and Passaic, 6·45, *7·30, †8·30, 10·00, 11·00 A. M., 12·00 M., *1·45, 3·30, 4·00, 5·15, 6·00, *6·30, 8·00 10·00 and *11·30 P. M.

For Hackensack and Way, 5·00 8·15 and †8·45 A. M., 1·00, 4·00, 5·00, 6·00 and 6·30 P. M., and Saturdays only, 12·00 midnight.

For Hillsdale and Way, 5·00, 8·15 and †8·45 A. M., 1·00, 4·00, 5·00 and 6·00 P. M., and Saturdays only, 12·00 midnight.

For Spring Valley and Way, 5·00, 8·15 †8·45, and ·00 A. M., 1·00 4·45, 5·00 and 6·00 P. M., Saturdays only 12·00 midnight

For Englewood 5·00, 7·45, *9·00, A. M., 1·30, 3·15 4·15, 4·45, 5·30, 6·30 and *7·45 P. M. Saturdays only, 12·00 midnight.

For Cresskill, 5·00, 7·45, *9·00 A. M., 1·30, 3·15, 4·15, 5·30, 6·30 and *7·45 P. M. Saturdays only, 12·00 midnight.

For Upper Piermont, 5·00, 7·45, *9·00, A. M., 1·30, 4·15, 4·45, 5·30, 6·30 and *7·45 P. M. Saturdays only, 12·00 midnight.

For Piermont and Nyack, 7·45 and *9·00 A. M., 1·30, 4·45, 5·30, 6·30 and *7·45 P. M. Saturdays only 12·00 midnight.

N. B.—Trains leaving Chambers street on even hours or half hours leave 23d street fifteen minutes earlier than above time. The 5·00 A. M., 10·00 and 11·30 P. M. Trains start from Chambers Street only.

N. B.—Trains on the N. R. R. and Newark Branch leaving Chambers street on quarter hours, leave 23d street thirty minutes earlier than above time.

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* Daily. † Sundays only. *‡* Goshen Sundays only. § Nyack only.

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SUPERIOR PURITY, DURABILITY AND COLOR.
ADDITIONAL TRADE MARK.
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$50 Reward for detection of counterfeits.
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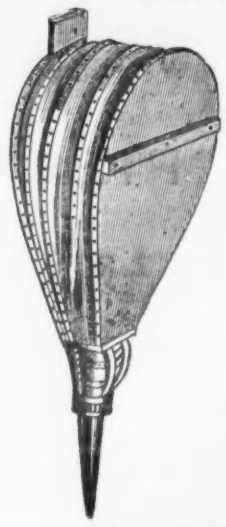

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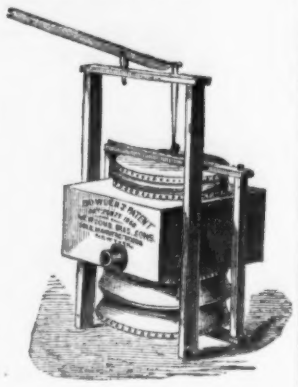
Bowden's Patent TRIPLE-ACTION Forge Bellows.



These Bellows are superior to all others now in use.

They can be used either in single or double-action, for light or heavy work, as required. They maintain a steady and continuous blast, the air being forced into the chest both at the up and down stroke. The strength of blast obtained is double that of the ordinary bellows of the same dimensions. They work easily. While the blast is double, the power required to work them is no more than that of a common bellows. Being fully rigged and geared, ready for work, and easily moved from place to place, they are very convenient or rail road, mining, and other purposes where portable bellows are required. They economize space, occupying only half the room of an ordinary bellows. These Bellows come to hand at once. A good b ast is obtained at the first stroke, and no time or labor is lost, as in the old single-action bellows, in getting up a good blast. They can be made of any size and shape, to suit all requirements. They are the cheapest Bellows in the world. With all the advantages of double-action, they cost no more, power for power, than the common single-action of same quality. For further particulars send for descriptive circular and price list.

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Strong, Cheap. Durable, No Soot, Better Draft.

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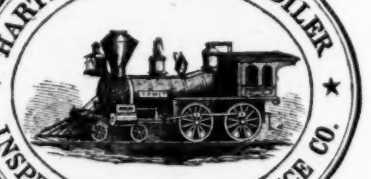

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THOMAS O. ENDERS Sec'y Ætna Life Ins. Co.
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GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fire Arms Mfg. Co.
AUSTIN DUNHAM, Pres't Willimantic Linen Co.
GEO. CROMPTON, Crompton Loom Works, Worcester.
KARL P. MASON, Pres't Prov. & Wor. R. R., Prov.
WILLIAM ADAMSON, of Baeder. Adamson & Co. Phila.
WM. B. BEMENT, of Wm. B. Bement & Co., Phila., Pa.

THOS. S. CUNNINGHAM, Manager,

New York Branch, No. 1 Park Place.

D. H. Whittemore's Hash, Mince Pie Meat and Sausage Meat Cutter.

Also, cuts Vegetables, &c. It will cut hash, including potato, in one minute, saving much time in preparing meals. It will cut mince pie meat and sausage meat in from two to three minutes, and with less labor than in chopping the same time with a common knife! While it is superior as a sausage meat cutter, it is much more valuable to the family for cutting boiled meat and vegetables, because much more frequently brought into use, yet costs no more than "Sausage" Meat Cutters. The meat in the Machine is simply rolled under the knives, so that but little power is required. The machine has been thoroughly tested, is meeting with a ready sale, and is warranted to be all that it is represented. Retail Price, $3·00; Wholesale Price, $27·00 per doz. Orders are respectfully solicited. Manufactured by *D. H. WHITTEMORE, Worcester, Mass.*, Manufacturer of the "Bay State" and "Skeleton" Apple Paring, Coring and Slicing Machines, "Union" Apple Parer, "Bay State" Peach Parer, Peach Stoner and Halver, Nut Cracker, &c.

METALS.

IRON.—DUTY: Bars, 1 to 1¼ cents per lb.; Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs.; Boiler and Plate, 1¼ cents per lb.

Pig Iron.

AMERICAN.

Foundry No. 1 Lehigh	₩ ton	$45 00 @
Foundry No. 2	"	43 00 @
Gray Forge	"	40 00 @
White and Mottled	"	

SCOTCH.

Gartsherrie	"	55 00
Coltness	"	55 00
Glengarnock	"	50 00
Eglinton	"	48 00 @ 49 00

Bar Iron.

Am. Refined, at mill	₩ ton,	100 00

Rails.

Welsh, gold	₩ ton,	71 00 @ 72 00
American, at works	"	@ 80 00
Old Rails, currency	"	50 00

Scrap Iron.

Wrought Scrap from yard	"	45 00
Wrought Scrap, from dock	"	40 00

Bar Iron from Store.

Common Iron.

⅜ to 2 in. round and square	₩ ton	$100 00
⅝x9-16 in. " " "	"	105 00
⅛ in. " " "	"	107 50
2½ to 3 in. " " "	"	105 00
1 to 6 in. wide x ⅜ and 1 in. thick	"	100 00
1¼ to 6 in. wide x ⅛ & 5-16 in. thick	"	105 00
1 and 1¼ in. x ¼ and 5-16	"	107 50

Swedish Iron.

1¼x⅜ and ½	₩ ton	155 00
1¼x⅜ to ⅝, and ¾ square	"	150 00
1¾ to 5x⅜ to ⅝ and ⅞ to 2-in. square	"	145 00
6 to 12x⅜ and ½	"	155 00

Refined Iron.

⅜ to 2 in. round and square	"	105 00
1 to 6 in. wide x ⅜ to 1 thick	"	105 00
1¼ to 6 in. wide x ⅛ and 5-16 thick	"	110 00
1 and 1¼ x ¼ and 5-16	"	112 50

Large Rounds.

2¼ to 2¾, round and sqnare	"	122 50
3, 3⅛ and 3¼ in.	"	117 50
3⅜ and 4 in	"	125 00

Rods—⅜ and 11-16, round and square

⅜ and 9-16, " "	"	115 00
7-16, " "	"	117 50
½, " "	"	122 50
5-16, " "	"	127 50
¼ " "	"	132 50
3-16, " "	"	152 50

Hand Iron.

1 to 6 in. x 3-16 to No. 12	"	122 50

Horse Shoe Iron.

⅜ and ¼ x ⅜, to ½	"	127 50
1 x ⅜, to ½	"	117 50

Ovals, Half Ovals and Half Rounds.

⅜ to 1½	₩ ton	130 00
⅞ ⅝ and 11-16	"	135 00
⅛ and 9-16	"	140 00
7-16	"	145 00
⅜	"	150 00

Nail Rods

UB	₩ lb	9c

Norway Shapes

⅛ to 2 in. x ⅛ to ⅜	"	8¼c
⅜ to ⅝ square	"	8¼c

Norway Bar.

⅜ to 2 in. square	"	7¼c

Spring Steel.

1 to 4 in. wide	"	

Tire Steel

⅝ to 1⅜ x ⅛ & 5-16	"	
⅜ & 1 x 3-16	"	
⅞ & 1 x ½	"	

Toe Calk Steel

½ to ⅞ x ⅜ to ½	"	8¾c

Plow Steel.

6 to 16 wide	"	9½c

Sleigh Shoe Steel

⅝ to 1⅜ x ⅜ to ½	Stock	" 8¼c

Hoops, ⅛ x No. 22	₩ ton	172 50
" ⅛ x No. 20	"	142 50
" ⅛ x No. 19	"	137 50
" 1 and 1¼ x No. 18	"	132 50
" 1¼ to 2 and 1x1¼ x No. 13 & 14	"	127 50
Scroll Iron—⅝x12	"	150 00
" " 10	"	140 00
" " ¾ and 5-16	"	135 00
" " 3-16	"	130 00
" ⅝ x 14	"	145 00
" " 12	"	140 00
" " 10	"	135 00
" " 3-16	"	130 00
" " ⅛	"	125 00
" ¾ x 14	"	137 50
" " 12	"	135 00
" " 10	"	130 00
" " 3-16	"	125 00
" " ⅛	"	122 50
" ¾ x 14	"	132 50
" " 12	"	130 00
" " 10	"	125 00
" " 3-16	"	122 50
" " ⅛	"	120 00
" " 5-16	"	120 00

Sheet Iron.

		English.	American
Nos. 10 to 20	₩ lb	6¾c	8c
21 to 24	"	7¼c	8¼c
25 to 26	"	7¾c	8½c
27	"	7¾c	8½c
28	"	8c	9c
30	"	8½ @ 9c	
Galvanized, 10 to 20	₩ lb		12c
21 to 24	"		13c
25 to 26	"		14c
27	"		15c
Patent Polished	"		15 c
Russia	Nos. 8 @ 11,	"	20c @ 22 c
"	Nos. 12 @ 16,	"	20c @ 22 c
Belgian	"		13 c

One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

4½	5	5½	6	7	inch.
$3 75	4 25	5 25	5 25	6 50	per doz.

RUSSIA IRON.

4½	5	5½	6	7	inch.
$7 00	8 00	13 00	13 00	14 00	per doz.

Brass.

ROLLED AND IN SHEETS.
(Brown & Sharp's Gauge.*)

For the purchase of 100 pounds and over at one time:

HIGH BRASS.

All Nos. to No. 28, and widths 14in. and under	40c
All Nos. to No. 28, inclusive and widths over 14 to 20 in. inclusive	43c
Over 20 in. to 30 in., inclusive	46c
Half-cent ₩ lb advance on each No. above No. 28 to 38, inclusive.	
All Brass thinner than No. 38 is Platers' Brass at	59c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths	46c
Printers' Rules	50c
Sheets wider than 30 in. and under 40 in.	50c
" 40 " and over	52c
Circular sheets, in diam. from 4 in. to 14 inclusive	50c
Circular sheets, in diam. over 14 in. to 20 inclusive	53c
Circular sheets, in diam. over 20 in. to 30 inclusive	56c
Circular sheets, in diam. over 30 in. to 40 inclusive	59c
Circular sheets, in diam. over 40 in	62c

LOW BRASS.

4 cents ₩ lb more than High Brass.

Gilding Metals, 7c. ₩ ₩ more than High Brass.

Platers' or Gold Metal { In Bars 52c; Sawed 55c

FOR SLITTING: Metal in Width,

2 in. to ⅛ in., to No. 30, inclusive, 1c. ₩ lb advance.
2 in. to 1 in., thinner than No. 30, 2c. ₩ lb advance.
1 in. to ⅛ thinner than No. 30, 3c. ₩ lb advance.
⅛ in. and less to No. 30, 2c. ₩ lb advance.
⅛ in. and less thinner than No. 30, 5c. ₩ lb advance.
10 ℅ discount.

SCRAP.

High Brass Scrap, 21 cents, net.
Low " " 23 " "
Gilding, 25 cents, net.
Turnings, Filings and Chips, half the price of Scrap, net

BRASS AND COPPER WIRE.
(Stub's Wire Gauge.)

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20	43	47	53
Nos. 21, 22, 23	44	48	54
Nos. 24 and 25	45	49	55

Brass Wire straightened and cut, 4 cents advance, 10 ℅ discount

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gil and d'g Cop'r.
No. 26	0·45	0·49	0·55
No. 27	0·48	0·52	0·58
No. 28	0·50	0·54	0·60
No. 29	0·52	0·56	0·62
No. 30	0·54	0·58	0·66
No. 31	0·56	0·60	0·70
No. 32	0·60	0·64	0·75
No. 33	0·64	0·68	0·85
No. 34	0·68	0·72	0·95
No. 35	0·73	0·77	1·07
No. 36	0·82	0·86	1·19
No. 37	1·02	1·02	1·32
No. 38	1·32	1·32	1·62

Ten cents per pound extra for Spooling.

TUBING
(Brown & Sharp's Gauge.)

	₩ lb
Plain to No. 20, inclusive	$0·56
Nos. 21, 22, 23, 2c. advance on List for each No.	
Nos. 24, 25, 26, &c. " " " "	
Above No. 26 special rates.	
Plain Tube, 1-4 inch	72
" " 3-16 "	1 57
" " 1-8 "	1 82

All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 20 65
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet.
10 ℅ discount.

BRASS DOOR RAIL, Polished.—52 cents per lb.—10 ℅ discount.

BELT AND HOSE COPPER RIVETS AND BURS.

Price per ₩	57	58	60	62	64	66	68	72	76c.
Nos.	7	8	9	10	11	12	13	14	15

Braziers Rivets, 51 cents per pound.
Copper and Brass Rivets and Burs made to particular sizes and pattern.
The discount on the foregoing list will be 10 per cent.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent. 12 inch. to No. 26	0·65	0·80
6 " " "	0·75	0·90
10 " " "	0·90	1·10
15 " " "	1·00	1·25
18 " " "	1·10	1·40
20 " " "	1·20	

German Silver Sheets over 12 inches wide and weighing more than 10 lbs. $2·60 ₩ lb
Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.
German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap.
*Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Guage.

COPPER—DUTY: Pig, Bar and Ingot, 5; old copper, 4 cents ₩ lb; Manufactured (including all articles of which copper is a component of chief value), 45 ℅ ad valorem. All subject to a reduction of 10 per cent.

American Ingot	₩ lb	32½ @ 33c
English "	"	31 @ 32c

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.

Braziers Copper, ordinary sizes, over 16 oz., per square foot	45c. ₩ lb
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	48c. "
Braziers' Copper, 12 oz. per square foot and lighter	51c. "
Circles less than 84 inch in diameter	48c. "
Circles, 84 inch diameter and over	51c. "
Segment and Pattern Sheets	48c "
Locomotive Fire Box Sheets	45c. "
Sheathing Copper, over 12 oz. per sq. ft	43c. "
" " 12 oz. ₩ sq. ft. & lighter	51c. "
Bolt Copper	45c. "

No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x18, by the case	8c. ₩ sheet.
14x48, less than case	10c. "
Boiler Sizes, 7 and 8 inch	12c. "
" " 9 inch	15c. "
Other sizes not larger than 30x60	2½c. ₩ sq. ft.
Larger than 30x60	5c. " "

Copper Bottoms, 48c ₩ lb.; 5 ℅ discount.

O'NEIL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier	49c. By the case, 48c. ₩ lb
12 oz. and lighter	52c. " " 51c. "

Boiler Sizes.

7 in., 14x52. 8 in., 14x56, 9 in., 14x60.

14 and 16 oz. and heavier	51c. By the case, 50c. ₩ lb.

(And all sizes not over 30 inches wide).

30x60.

14 and 16 oz. and heavier	53c. ₩ lb.
12 oz	56c. "

LEAD—DUTY: Pig, $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.

Spanish	@ 6¾c gold
German Refined	@ 6¾c gold
English	@ 7¼c gold
Bar	dis 10 ℅ 9½c
Pipe	dis 10 ℅ 11 c
Tin Lined Pipe	dis 10 ℅ 16½c
Sheet	dis 10 ℅ 11 c
Shot	dis 10 ℅ Drop, 11¼c; Buck, 12½c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2½ cents: over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 ℅ ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool	17c
Spring	13½c
Homogeneous	13½c
Tire	12½ @ 13½c
Machinery (round and square)	11½ @ 12c
File	12½
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
saw Plate, gang and X cut	13 @ 14
circular as to size	18 @ 20c

Chrome Steel.

Tool	16 @ 18c
Machinery	11 @ 12c
File	12 @ 15c

English Steel—payable in gold, dis. 5 ℅ cash.

do	Best Cast	₩ lb	19½c
do	Extra Cast	"	20½c
do	Round Machinery, Cast	"	12½c
do	Swaged, Cast	"	21½c
do	Best Double Shear	"	19½c
do	Blister, 1st quality	"	15½c
do	do 2d quality	"	13½c
do	do 3d quality	"	11½c
German Steel, Best		"	12½c
do	Eagle	"	11½c
do	3d quality	"	10½c
Sheet Cast Steel, 1st quality		"	19½c
do do	2d quality	"	17½c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash	6¾ @ 7c. gold
American "	7 @ 11c currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.: Electro-galvanized Plates, 2 cents per lb.; Manufacturers of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Banca or Block, and Pigs, free

Banca	₩ lb	33c,	gold
Straits	₩ lb	@ 32c,	gold
English	₩ lb	@ 32c,	gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal		@ 13·00
12x12, "		@ 13·50
14x20, "		@ 14·00
I X 10x14,		@ 15·25
12x12, "		@ 15·75
14x20 "		@ 16 25
For each additional X add		2·25 @ 2·50

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$12·00	$11·50	$11·00
14x20	12·50	12·00	
12x12	12·50	12·00	

TERNE PLATE.

	Prime Charcoal.	2d qual. Charcoal.	Coke.
I C 14x20	$11·50	11·00 @ 11·25	10·00 @ 10·50
I X 14x20	13·50		

ZINC—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet, 2½ cents per pound. All subject to a reduction of 10 per cent.

Sheet	cask 10
"	open 10½

Paper Stock, Old Metals, &c

(Dealers' Selling Prices.)

Canvas linen	5½ @ 5¾
Canvas, cotton, No. 1	7¼ @ 7½
" " No. 2	4
White linen rags, No. 1	6¾ @ 7
" " No. 2	5 @ 5½
Colored	3 @ 3¼
Mixed woolens	2 @ 3
Soft woolens	11
Gunny bagging	2¾ @ 3
Jute Butts	1¾ @ 2
Kentucky bagging	3½ @ 3¾
Book stock	4½
Waste paper and scraps	2½ @ 3
Rope cuttings	1½ @ 3
Kentucky Bale rope	4 @ 4½
Oakum junk, No. 1	5¼ @ 5½
" " No. 2	4
Grass rope	4 @ 4½
Tarred Shaking	2 @ 2½

Old Metal.

Copper	26 @ 27
Yellow metal	18 @ 20
Brass	18 @ 21
Old lead, solid	6½ @ 7
Tea lead	5½
Wrought Iron	1½
Sheet iron	1 @ 1½
Cast iron	@ 1½
Machinery iron	1¾ @
Zinc	@ 5¼
Pewter, No. 1	27 @ 28
" No. 2	19 @ 12
Spelter	7

Paints, Oils, Glass, etc.

Paints.

Black, lamp—Coach Painters	₩ lb 20
" " Ordinary	6c
" Ivory Drop, fair	15c
" " best	20c
Black Paint, in oil	kegs, 8c, asst'd cans, 10½c
Blue, Prussian, fair to best	50 @ 75c
" " in oil	35 @ 65c
" Chinese, dry	83c
" Ultamarine	25 @ 30c
Brown, Spanish	1½c
" Van Dyke	9c
Carmine, French	$14 00
Green, Chrome	15 @ 25c
" " in oil	18 @ 25c
" Paris	good, 20c, best, 40c
" " in oil	" 30c, " 45c
Mineral Paints	1½ to 4c
Orange Mineral	14½c
Red Lead, American	9¼c
" English	10½c
" Venetian (N. C.) dry	2½c
" " in oil	asst'd cans, 11c, kegs, 8½c
" Indian, dry	10c
Rose Pink	13c
Sienna, American, Raw	4c
" Burnt	4½c
" " in oil	16 @ 20c
" Raw	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	3½ @ 7½c
" " in oil	16 @ 22c
Vermillion, Chinese	1 45
" English	1 30
" Trieste	1 05
" American, Common	24c
White Lead, American, pure dry	10¼c
" " " in oil	11½c
White, Paris, English, prime	in bbls. 2½ @ 2¾c
Yellow Ochre, French	2½ @ 2¾c
" " " in oil asst'd cans, 11c, kegs, 8½c	
" " Vermont	in casks 1½c
" Chrome	17 @ 27c
" " in oil	18 @ 28c
Zinc White, American No. 1 dry scarce	10c
" " " 1, in oil	12c
" French (Paris)	11½c
" " in oil	12½c

Oils.

Linseed Raw	₩ gal. casks, 90c, bbls, 91c
" Boiled	" 95c, " 96c
Whale, Crude	"
" Bleached Winter	"
Sperm, Crude	"
" Winter unbleached	"
" Bleached	" 1 85
Seal, Extra Refined	" 87½c
Lard, Pure Winter	" 80c
" Spring	" 78c
Cotton Seed, Crude	" 58c
" Southern Yellow	" 65c
" White	" 75c
Neatsfoot, Winter	" $1 35
Natural Lubricating	" 45c

Sundries.

Asphaltum	8c
Benzine	₩ gal. 20c
Chalk	1½c
" Block	
Dryer, Patent, Am'n	asst'd cans, 11½c., kegs, 9c
" " English	" 12c., " 11c
Flocks	
Frostings	50c
Glue, White	33 @ 45c
" Sheet	20c
Glazier's Points, Zinc	9c
Gum, Copal	30c
" Damar	25c
" Shellac, English	50c
" " dark	46c
Litharge	10c
Pumice Stone, selected Lumps	½ @ 7c
" " powdered	4c
Putty in bladders	3½c
" in bulk	3c
Rotton Stone, soft, English	5c
Sand Paper, crystal	$3 25
" " flint	4 50
Spirits Turpentine	62c
Whiting, Spanish	1½c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

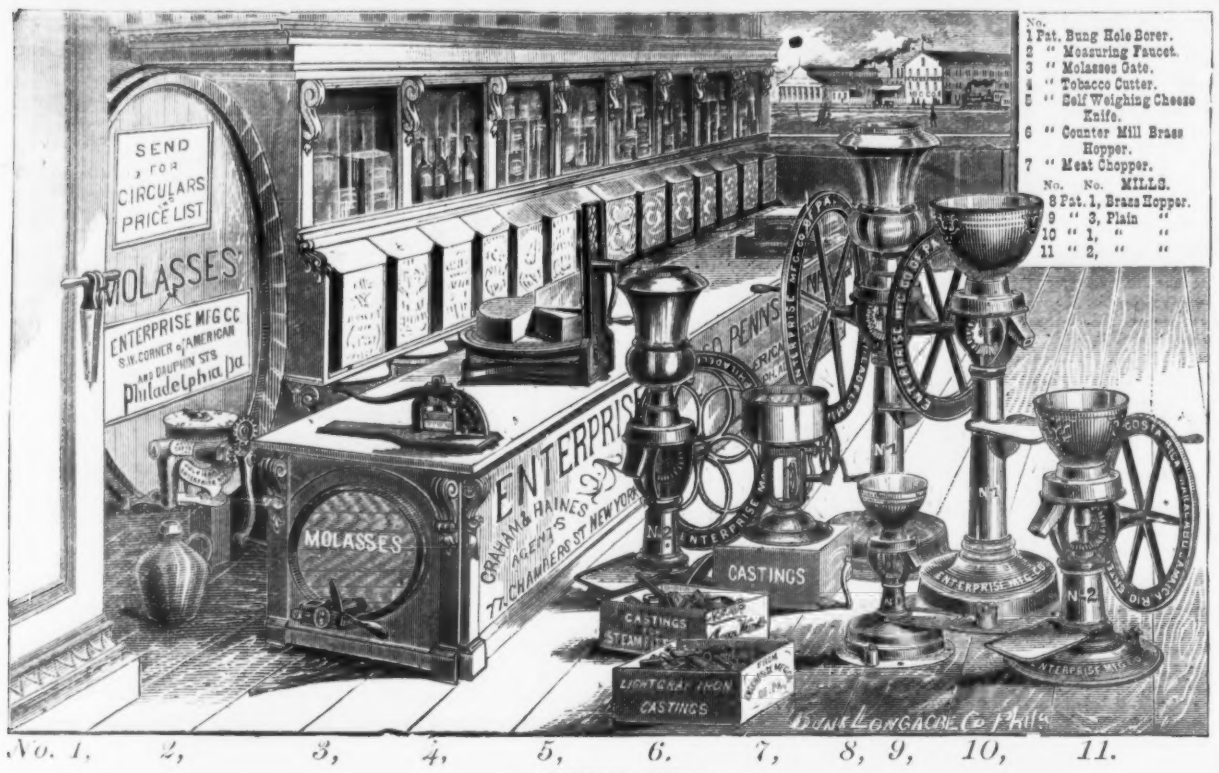
SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$8·00	$7·00	$6·50	$6·00
8 x 10 to 10 x 14	9·00	8·00	7·25	6·50
10 x 15 to 12 x 16	9·75	8·75	7·75	7·00
11 x 18 to 16 x 22	10·25	9·25	8·25	7·50
15 x 24 to 15 x 32	12·50	11·50	10·50	8·50
20 x 28 to 22 x 30	15·00	13·00	11·00	9·00
26 x 28 to 22 x 36	16·00	14·50	12·50	
24 x 36 to 24 x 40	18·00	16·00	13·50	
28 x 38 to 26 x 44	18·50	16·50	14·00	
28 x 44 to 30 x 48	20·50	18·00	15·00	
30 x 50 to 32 x 52	22·00	20·00	16·00	
32 x 54 to 32 x 58	26·00	23·00	18·50	
34 x 58 to 34 x 60	30·00	27·00	22·50	
36 x 60 to 40 x 60	36·00	33·00	28·50	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$12·00	$11·50	$10·00	$9·50
8 x 10 to 10 x 14	13·50	12·00	11·00	10·00
10 x 15 to 12 x 16	15·00	14·00	12·50	11·00
11 x 18 to 16 x 22	16·50	15·50	14·00	12·00
15 x 24 to 15 x 32	20·00	18·00	17·00	
20 x 28 to 22 x 30	24·00	22·00	18·50	
26 x 28 to 22 x 36	26·50	24·00	22·00	
24 x 36 to 24 x 40	30·00	27·00	23·50	
28 x 38 to 26 x 44	32·00	28·50	25·50	
28 x 44 to 30 x 48	34·50	31·00	27·00	
30 x 50 to 32 x 52	36·50	33·00	28·50	
32 x 54 to 32 x 58	43·00	39·00	34·00	
34 x 58 to 34 x 60	50·00	45·00	40·00	
36 x 60 to 40 x 60	60·00	55·00	50·00	

Discount 4c to 40&10s.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GRAHAM & HAINES AGENTS 71 CHAMBERS ST NEW YORK
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CASTINGS
LIGHT GRAY IRON CASTINGS
No. 1 Pat. Bung Hole Borer.
2 " Measuring Faucet.
3 " Molasses Gate.
4 " Tobacco Cutter.
5 " Self Weighing Cheese Knife.
6 " Counter Mill Brass Hopper.
7 " Meat Chopper.
No. No. MILLS.
8 Pat. 1, Brass Hopper.
9 " 3, Plain "
10 " 1, " "
11 " 2, " "
No. 1, 2, 3, 4, 5, 6. 7, 8, 9, 10, 11.

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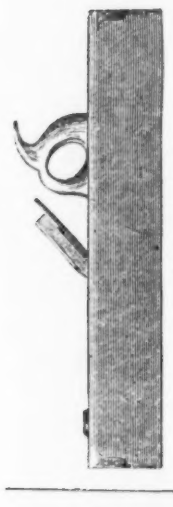
MANUFACTURERS OF

PLANES,



Plane Irons, Carpenters', Cabinet Makers', and Coopers' Tools.

BENCH, HAND, AND TAIL SCREWS

and all kinds of **SMALL HANDLES.** We use only **Second-Growth Ohio Timber** in our Planes, and warrant our Irons equal to any in the market.

Our Planes are better shape, finer finish, and better timber than any other tool in the market

For Catalogues and information, address

SANDUSKY TOOL CO.,
Sandusky, Ohio,
Or GRAHAM & HAINES,
88 Chambers Street, New York.

GRAHAM & HAINES

HAVE REMOVED

to 88 Chambers St., N. Y.

COAL HODS.

Our Patent Stamped Corrugated Bottom Coal Hods

Are conceded to be the best in the market.

Common Hods, Morning Glory Hods, Excelsior Hods for self-feeding Stoves, and all kinds of Fancy Hods.

Fry Pans. Excelsior Polished Deep Fry Pans, and Unpolished Deep Fry Pans.

Excelsior Broiler. This Broiler has been pronounced by all who have seen and tried it to be the best in the market.

Galvanized Sheet Iron Water Pails, Well Buckets, Tea Kettles, Ash Cans, Chamber Pails, &c., &c.

Patentees and Sole Manufacturers of the combined Chamber and Commode Pail, and manufacturers of all kinds of Japanned and Galvanized Goods.

Send for Illustrated Catalogue.

SMITH, BURNS & CO., Manufacturers,
Warehouse, 45 Cliff Street, between Beekman and Fulton Streets, NEW YORK.

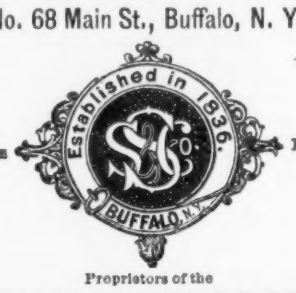
GENERS

Genuine Emerson's Razor Strap.
[ESTABLISHED 1810.]
BENJAMIN F. BADGER, MANUFACTURER, 51 ELM STREET, CHARLESTOWN, MASS.
Ent'd according to Act of Congress in the year 1868, by Benj. F. Badger, in the Clk's Office of the Dis. Court of Mass.

810

Sidney Shepard &Co.,

No. 68 Main St., Buffalo, N. Y.,

TRADE  MARK.

Proprietors of the

BUFFALO STAMPING WORKS.

Manufacturers of

TINNED & WROUGHT IRON FRENCH WARE

STAMPED AND JAPANNED TIN WARE.

Dealers in

HARDWARE AND METALS,

Tinmens Tools, Machines, and Furnishing Goods.

Please send for Illustrated Catalogues and Price Lists.

HART, BLIVEN & MEAD MFG. CO.,

CHARLES BLIVEN, Pres. EDWARD B. MEAD, Treas.

Office and Warehouse at

348 and 345 Pearl, and 18 and 20 Cliff Streets,

NEW YORK.

Three Sets of Factories at Kensington Conn.

MANUFACTURERS, IMPORTERS AND DEALERS IN

General Hardware.

RIPLEY MFG. CO.,

Unionville, Ct. Warehouse, 105 Reade St., N. Y.

Adjusting Plumbs and LEVELS, Mallets.

Boxwood and Ivory RULES, Door Stops.

Best Choker Traps, Steak Hammers,
Cover Lifters, Automatic Boot Jacks,
Patent Bushed Wheel Sash Pullcys.

Contracts for Fine Wood Turning executed.

JOHN TOLER, SONS & CO.

MANUFACTURERS OF

FURNITURE CASTERS.

We make the greatest variety of any house in the States. We confine ourselves exclusively to their manufacture, and guarantee the quality. We solicit only the trade, to whom we are prepared to give the best prices.

ESTABLISHED IN 1844.

108, 110, 112, 114 Adams Street,

NEWARK, N. J.

Sole manufacturers of Ford's Celebrated Patent Casters.

Pipe, Fittings, &c.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS

For Steam, Water and Gas.

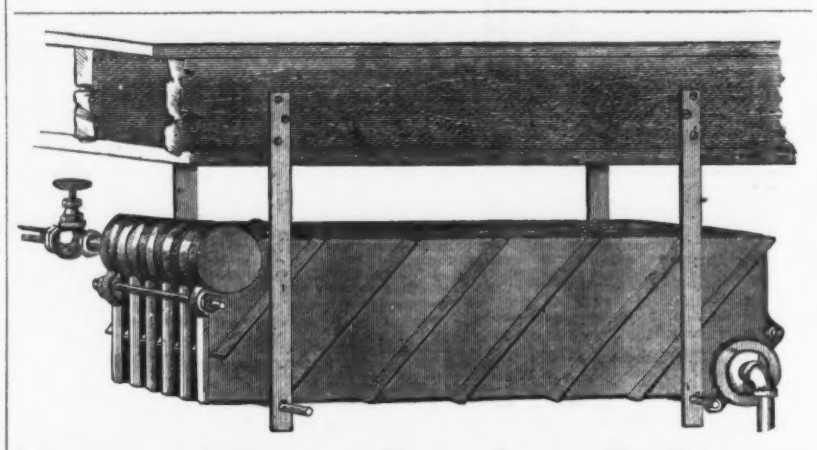
WROUGHT IRON PIPE

And Fittings, Plain and Galvanized.

PLUMBERS' MATERIALS.

Illustrated Catalogue sent by express to the Trade on application.

Warerooms, 56 John Street, New York.
FACTORY, PATERSON, N. J.



Improved Patent Cast Iron Radiators,

For Steam and Hot Water.

PANCOAST & MAULE,

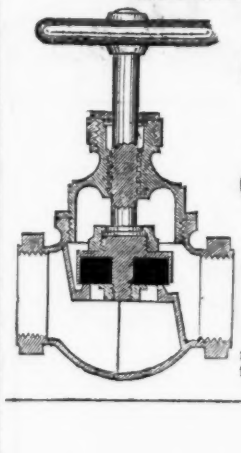
227 Pear St., PHILADELPHIA.

Send for descriptive Circular.

Nelson, Finkel & Co.,

439 East 10th St., New York,

Manufacturers of



Jenkins' Patent Compression Valves AND Gauge Cocks Also, Nelson's Patent LUBRICATOR.

Warranted the most reliable and durable in the country.

CAST IRON PIPES,

FOR WATER AND GAS.

Branches Retorts, &c.

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EATON & COLE.

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Manufacturers of

Wrought Iron Pipe Fittings

BRASS VALVES,

COCKS, TOOLS, &C.,

68 John Street,

NEW YORK.

GRAFF TUBE WORKS.

WILLIAM GRAFF & CO.,

Manufacturers of Plain and Galvanized

Wrought Iron Pipe

For

Gas, Steam, Water, Oil, &c.,

No. 140 First Ave., PITTSBURGH, PA.

Pipe of any Size, Length or Thickness furnished to order.

Chas. Gregg Stearns, Pres. A. F. Weaver, Treas.
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THE CHARLES GREGG MANUFACTURING CO.

FITTINGS FOR

Steam, Gas and Water,

PLAIN AND GALVANIZED

WROUGHT IRON PIPE,

Nos. 62 & 64 Gold Street,

NEW YORK.

Business Established, 1836. Incorporated, 1872.

Industrial Tube Works.

ISAAC J. GRIFFITHS & BROS.

Manufacturers of

Wrought Iron & Galvanized Tubes

For Gas, Steam and Water.

Brass and Iron Valves, Cocks

Cast and Malleable Iron Fittings.

Tubes cut and fitted to plans and specifications.

1529, 1531, 1533 & 1535 South 7th St.,

PHILADELPHIA.

WASHINGTON PIPE WORKS,

Office, No. 8 Central Street.

BOSTON, January 17, 1872.

The Washington Pipe Works

are now in full operation, and I take this method of informing my friends and the public that I am now prepared to fill all orders for the different size of

STEAM & GAS PIPE & FITTINGS

Of the best quality and at the lowest market rates.

THOMAS CUNNINGHAM.

Address, Box 3042.

WM. S. CARR & CO.

Sole Manufacturers of

Carr's Patent Plumbers' Goods,

Pumps, Water Closets, Fountains, Vases, &c.

OFFICE AND WAREROOMS,

106, 108 & 110 Centre Street,

Factory, Mott Haven, New York.

ROBBINS' PATENT PIPE WRENCH.

Specially designed for large Pipe and heavy work, and for that use is the best universal wrench in market.

Manufactured by

RICE, ROBBINS & CO.,
Pittsfield Mass.

PHILADELPHIA.

(Corrected weekly by Loyn, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days' interest added at 10 per cent. per annum.

ANVILS.

Solid Cast Steel ..... ℔ 12½c
Peter Wright's ..... ℔, gold, 12½c
Wilkinson's 11½c
Eagle, ℔ 11 cents, currency ..... dis 15%

APPLE PARERS.

Reading, Turn Table ..... per doz $8 50
Union ..... per doz 6 00

AXES.

Mann's ..... light $14 00, dis 10%
Hunt's, Light ..... 15 00, dis 5%
Red Indian, all sizes ..... net $14 00
Red Chieftian " ..... net 14 75

AUGERS AND BITS.

Bates' Manufacturing Co 's Bits ..... dis 30 @ 20&5%
Douglas' " " " " ..... dis 30 @ 25%
Ives' " " " " ..... dis 30 @ 20&5%
Bonney's Pat. Hollow Augers ..... dis 25%
Bates' Mfg. Co. Augers ..... dis 20 @ 20&5%
Ives " " ..... dis 20 @ 20&5%
Douglas " " ..... dis 20 @ 25%
Cook's Patent Bits ..... dis 25 @ 25&10%
Russell Jennings' Bits ..... dis 10%

BALANCES.

Landers, Frary & Clark's ..... dis 10 @ 15%
Chatilion's ..... dis 10 @ 15%
Morton's ..... dis 10 @ 15%
Common Spring, with Hook ..... ℔ doz $1 38½@2 00

BELLS.

Bevin Bros. Mfg. Co. Hand Bells ..... dis 50%
Other makers, light ..... dis 50%
Cone's Door Bells ..... dis 10%
Western and Kentucky ..... dis 50%

BORING MACHINES.

Bates' Mfg. Co., complete with augers ..... dis 10 @ 15%
Douglas' " " " ..... dis 10 @ 15%
Common No. Augers ..... $4 25 @ 4 00
Anguiar, Extra, No. Auger ..... 5 50 @ 5 00

BOLTS.

Eastern Carriage Bolts ..... dis 50&15%
Western " " ..... dis 50&15%
Philadelphia Carriage Bolts ..... dis 45 @ 45&5%
Wrought Shutter Bolts ..... dis 35&10%
Cast " " ..... dis 35%

BRACES.

Barber's ..... dis 30&10%
Bartholomew's ..... dis 10 @ 15%
Spoffard ..... dis 33⅓ @ 37½%

BUTTS.

Cast Fast Joint, Narrow ..... dis 15%
" " Broad ..... dis 30%
Cast Loose Joint ..... dis 40%
Acorn Drilled ..... dis 33⅓%
Wrought Loose Pin ..... new list dis 20%
Wrought Table ..... net
" Narrow ..... list net
" Loose Joint ..... dis 25%
Parker's Blind Butts ..... dis 25%
Shepard's " " ..... By the case
Clark's " " ..... dis 30%
Lull & Porter's do. ..... dis 25 @ 25&5%
Palmer's do. ..... dis 30 @ 30&5%

CHAINS.

German Halter, ... new gold list net
" Coil ..... new gold list net
Galvanized Pump ..... ℔ 15c
English Coil, less than cask ..... add ½c. ℔
Common Chain, ... ½c. ℔ less.

℔	14	11	10½	9¾	9¼	9	8½c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

Best Proof, by the cask, 500 lbs.; less than cask add ½c.

CHISELS.

Socket Framing ..... dis 60 @ 60&5%
Socket Firmer ..... dis 60 @ 60&5%
Tang Firmer ..... dis 40 @ 40&5%
Beaty's Framing and Firmer ..... dis 10 @ 10&5%

CASTERS.

Porcelain Wheel ..... dis 30&10%
Iron ..... dis 20&10%
Brass ..... dis 10%

CLOTHES WRINGERS.

Reliance advanced March 7 ..... per doz $72 00
Crown " " 7 ..... " 72 00
Monitor " " 7 ..... " 72 00
Universal " " 7 ..... " 72 00
Novelty " " 7 ..... " 72 00

In 5 dozen lots assorted, at one time $70 00 per doz.

COFFEE MILLS.

Common Box and Side advanced April 1872 ..... dis 15%
Patent " " ..... dis 10%

CUTLERY.

American Pocket (best) ..... dis 20 @ 25%
Landers, Frary & Clark, J. Russell & Co., and Lamson & Goodnow Mfg. Co ..... dis. 15%

DRAWING KNIVES.

Hart Mfg. Co.'s ..... dis 60 @ 60&5%
Concave Adjustable Handle ..... dis 10%
Beatly ..... dis 10%

FILES.

Nicholson Mill Files ..... new list, $5 00 to £ cur
" Bastard ..... " " 5 00 to £ cur
" Taper ..... " " 5 00 to £ cur
Butcher's Mill ..... Unsettled
" Bastard ..... Unsettled
" Taper ..... Unsettled

FLUTING MACHINES.

Royal, No. 1, 4½ inch Rollers ..... list $6 00
" No. 2, 6 inch Rollers ..... list 7 00

HAMMERS AND HATCHETS.

Yerkes & Plumb's ..... dis 5 @ 10%
Hammond & Son's ..... dis 5 @ 10%

HINGES.

Strap and T ..... list net
Bonney's Gate ..... dis 20%

HORSE NAILS.

	Nos.	6	7	8	9	10
Ausable Horse Nails		27	25	24	23	22
Globe " "		29	26	25	24	23
Putnam " "		30	28	27	26	25
Brundage " "		26	24	23	22	21

On Ausable Globe & Brundage 1000 ℔ lots ..... dis 5%

KNOBS.

Door (regular manufacture) ..... dis 25%
Porcelain and Mineral ..... dis 25%

LOCKS AND LATCHES.

Rim and Mortise ..... dis 25%
Till and Cupboard ..... dis 20 @ 25%
American Padlocks ..... dis 40%
Trunk Locks ..... dis 5 @ 10%
Thumb and Roggens Latches ..... net @ dis 10%

MATTOCKS.

Long and Short Cutter ..... dis 10%
Western Pattern ..... dis 10%
Pennsylvania Pattern ..... dis 10%

MOLASSES GATES.

Enterprise Mfg. Co.'s Measuring Faucets ..... dis 20%
Stebbins' Gates ..... dis 40&10 @ 50%
Lincoln's " ..... dis 40 @ 40&10%
Landers, Frary & Clark's, Petroleum dis 10 @ 10&10%
Taylor's Petroleum Faucets ..... dis 20 @ 20&10%

MEAT CUTTERS AND STUFFERS.

Stow Mfg. Co. Meat Cutters, new list ..... dis 5%
Dixon " " " ..... dis 5%
Hale " " ..... dis 10%
Stow Mfg. Co. Stuffers ..... dis 5%

RULES.

Stanley Rule and Level Co ..... dis 30&10%
Stevens and Hubbard's ..... dis 30&10%

SQUARES.

Steel Squares, advanced August 1st ..... list net
Iron " " " 1st ..... list net

SAWS.

Disston's Hand, Mill and Circular ..... dis 12½%
Wm. McNiece's Hand, Cross-Cut and Circular, new list ..... dis 10%
Boynton's Lightning, new list ..... dis 30%

SHOVELS AND SPADES.

Rowland's Plain Back, advanced Apr. 1872 ..... dis 5&5%
" Back Strap " " " ..... dis 5&5%
Oliver Ames & Sons, advanced April 8 ..... net list
Brady Shovel Co ..... dis 7½%

SAD IRONS.

Reading (planed face) ..... per lb. 6c.
Coquanock (polished face) ..... " 5c.

STOVE POLISH.

Gem ..... per gross $5 00
Onyx ..... " $5 00

SASH LOCKS.

Clark's Patent ..... dis 20%
Ferguson " ..... dis 20%
Bonney's " Improved ..... dis 25%

SCREWS.

Iron (list Mar 6) ..... dis 50%
Brass (Brass Screw list) ..... dis 40%

SPOONS.

Plated Spoons, Rogers Bros. ..... dis 25%
Britannia, Parker's and Boardman's ..... dis 20%
German Silver ..... add 10% to list
" " Light ..... list net

TRY SQUARES.

Stanley Rule & Level Co ..... dis 40%
Diston's ..... dis 12½%

TACKS, CLOUT AND FINISHING NAILS.

Half Weight Tacks ..... dis 70%
" " by case ..... dis 70&7½%
Clout and Finishing Nails 7½%
" " by the case ..... dis 7½%

TRAPS.

Genuine Oneida—Newhouse list ..... dis 15%
Imitation " " ..... dis 30%

WRENCHES.

Coes Genuine ..... dis 30%
Coes Imitation Wrought Bar ..... dis 40%
" " Malleable Bar ..... 40&10%
Tafts Wrought Bar 60%
Tafts Malleable Bar 65%

WIRE.

No. 0 to 18 ..... dis 15%
No. 19 to 26 ..... dis 27½ @ 30%
No. 27 to 36 ..... dis 33⅓ @ 35%
Coppered 0 to 12 ..... dis 15 @ 20%
Tinned Broom Wire ..... dis 10 @ 15%
Bradlee & Co., Office Nos. 19 & 21 South Fourth st., Philadelphia. Price list of Proved and Warranted Chains. Discount ¾c. per ℔.

SHORT LINK CHAIN.

Size. Inches.	Average Wt. Per Fathom. Lbs.	Proof. Tons.	Price Cts. Per Lb.
¼	15	4	10½
9-16	19	5	10
5-8	25	6	9½
11-16	30	8	9·3
¾	35	10	8½
13-16	40	12	8¾
⅞	47	14	8½
15-16	54	16	8¾
1	60	18	8½
1 1-16	67	20	8¾
1⅛	74	23	8
1 3-16	82	26	7¾
1¼	90	28	7¾

All larger sizes same price as 1¼ inch.
Stud Chain 2½c. less than same size close link.

PITTSBURGH.

From the Pittsburgh Commercial.

FLAT BAR.

1¼ to 4 by ⅛ to 1 inch ..... 4·6c
4¼ to 6 by ⅛ to 1 inch ..... 4·8c
1¼ to 6 by 1⅛ to 1¼ inch ..... 5·0c
1¼ and 1⅛ by ⅛ to ¼ inch ..... 4·8c
1 and 1⅛ by ⅜ to ¾ inch ..... 4·9c
⅝, ¾ and ⅞ by ⅜ to ⅝ ..... 5·0c

HORSE SHOE.

All sizes ..... 6·1c
Nail rods 8 5c

HEAVY BANDS.

3½ to 6 by ⅛ and 5-16 inch ..... 5·9c
1½ to 3¼ by ⅛ and 5-16 inch ..... 5·3c
⅞ to 1½ by ¼ and 5-16 inch ..... 5·6c
⅛ to ⅜ by ⅛ and 5-16 inch ..... 5·8c

LIGHT BANDS.

3 to 6 by 3-16 to No. 12 ..... 5·6c
1¼ to 2¼ by 3-16 to No. 12 ..... 5·8c
1 to 1¾ by 3-16 to No. 12 ..... 6 2c
⅛ to ⅜ by 3-16 to No. 12 ..... 6·8c

HOOPS.

2¼ to 3 inch ..... 5·9c
3½ to 4¾ inch ..... 6·1c
1¾ to 2 inch ..... 6·1c
1⅝ to 1 11-16 inch ..... 6·4c
1⅝ and 1¾ inch ..... 6·7c
1 inch ..... 7·1c
⅞ inch ..... 7·6s
¾ inch ..... 8·1c
⅝ inch ..... 8·6c
½ inch ..... 9·1c

ROUND AND SQUARE.

1 to 1¼ inch ..... 4·6c
2 to 2¾ inch ..... 4·9c
3 to 3⅛ inch ..... 5·1c
3¾ to 4 inch ..... 5·6c
⅞ to 9-16 inch ..... 5·0c
½ to 7-16 inch ..... 5·3u
⅜ inch ..... 5·4c
5-16 inch ..... 5·8c
¼ inch ..... 6·2c
3-16 inch ..... 8·2c

OVAL IRON.

⅞ to 1¼ inch ..... 5·2c
⅝ to ¾ inch ..... 5·4c
½ inch ..... 5·6c
⅜ inch ..... 6·9c

HALF OVAL AND HALF ROUND.

⅞ to 1¼ inch ..... 5·5c
⅝ to ¾ inch ..... 6·0c
½ inch ..... 6·7c
⅜ inch ..... 8·2c

	Boiled.	Charc'l.	Juniata.
Sheet Iron, 10 to 14	6·2	7·7	9·2
" " 15 to 20	6·4	7·9	9·4
" " 21 to 24	6·6	8·1	9·6
" " 25 to 26	6·8	8·3	9·8
" " 27	7·0	8·5	10·0

All sheets over 28 in. wide, ¼c. ℔ ℔ extra.

TANK IRON.

3-16, ¼ and ⅝ inches thick ..... 6·0
Boiler Plate Iron ..... 7·9
Heads not flanging ..... 7·1
Heads flanging ..... 8·9
Plow Slabs ..... 6·8
Plow Wings ..... 7·3

RAILROAD IRON—COUNTERSUNK AND PUNCHED.

1¼ by ⅝, 7-16 and ½ inch ..... 5·6
1¼ by ¼ and 5-16 inch ..... 6·1
1¼, 1¾ and 2 by ⅜ and ½ inch ..... 5·1
1½ by ⅝ inch ..... 5·3

EXTRAS FOR CUTTING TO LENGTH.

Flat bars and rounds and squares 1c
Flat bars for tire 1c
Heavy bands 3c
Light bands and wagon box iron 4c
Hoops 5cc

TERMS.

Note or acceptance at sixty days, with currant rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within fifteen days of date of invoice. Payment to be made in New York exchange, United States Treasury notes, or their equivalent. No discount on bills of less than $50.

Heavy Hardware.

The following are the card rates of Lewis, Oliver & Phillips:

Iron, standard list, assorted sizes, for large orders, 4·6c, card rate, 2% off net.

Iron wedges ..... 7½c ℔ ℔ net
Norway Nail rods ..... 9¼c ℔ ℔ net
Fence Pickets—
⅝ round, bent to shape ..... 40c ℔ ft. fence, less 10%
Discount off Standard List.
Carriage and tire bolts, ... 60% off net
Plow blots ..... 15% off net
Stove bolts ..... list net
Machine and square head bolts new list ..... 15% off net
Coach and lag screws, new list ..... 15% off net
Bolt Ends, new list ..... 15% off net
Square and hexagon nuts and washers, new list ..... 2½c ℔ ℔ off net
Washers ..... new list, 4c ℔ ℔ off
1c. ℔ ℔ extra for less than 1 keg of each size.
Harrow teeth, in lots of 1 ton or more, 1 in. diam 6c; ⅞ & ¾ in. diam. 6c; ⅝ in. diam. 6¼c ℔ ℔.
Patent Headed Harrow Teeth, packed in casks ¼c extra ℔ ℔ net.
Skein bolts, in bulk, in lots of 1 keg or more, ⅛ in. diam. 9¼c; 9-16 in. diam. 10¼c; ½ in. diam. 11¼c.
1c. ℔ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinge, ⅛ to 1 in. diam. 10¼c; ⅞ in. diam. 11¼c; ¾ in. diam. 13¼c ℔ ℔, net.
Screw and Strap Hinges, in lots of 50 pairs or more, 14 to 36 in. long, 8c; 8, 10 and 12 in. long, 9¼c ℔ ℔ net.
Strap and T Hinges ..... net list
6 months purchases over $1000, 5% dis. allowed.
Screw hitching rings ..... $7 50 ℔ 100 net
Duck nest tuyere irons ..... $17 00 ℔ doz. net
Cast iron washers ..... 5¼c ℔ ℔ net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 feet long ..... ℔ ℔ 6c
1 to 2 in. diam. from 4 to 8 feet long 6¼c
1 to 2 in. diam., from 1¼ to 4 feet long 7c
⅞, ¾ and ⅝ in diam., over 4 feet long 7¼c
⅞, ¾ & ⅝ in diam., from 1¼ to 4 feet long 7¾c

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at screw end,	℔	set of 8 bolts			55c
12 "	½	"	℔	8 "	70c
12 "	½	"	℔	6 "	$1 00
14 "	½	"	℔	8 "	1 10
16 "	½	"	℔	8 "	1 20

5 cts. ℔ set for each additional inch over 14 inch. by ½. All lengths made.
Wagon Box Rods, narrow track each 18c
Wagon Box Rods, wide track, each 20c
Single Tree Irons, per set of four pieces 38c
Wt. Iron Bolster Plates, 3¾ in. wide, per set 60c
" " 3 " " " 65c
" " 3¼ " " 70c
" " 3½ " " 75c
Wagon Brake Ratchets ..... 18½c each
" " finished with guard 45c each
Wrought rub irons ..... 11c each
Wrought Hammer Straps, heavy pattern.. 16c each
" " " light pattern.. 13½c each
Stay Chain Hooks ..... 8c each
Single Tree or End Clips ..... each 9c
Double or Center Clips, light ..... each 10c
" " " heavy ..... each 12c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 set ..... 15% dis.
Wagon Box Staples, 1¼ to 2¾ in. to clinch per 1000, $16 50 net
Wagon Box Staples, Box Iron, to rivet on, per 1000, $11 50 net
Neck Yoke Eyes, each ..... 5¼c net
Neck Yoke Eyes, with ⅞ inch rings ..... 8¼c net
King Bolts, ⅞, 1, 1⅛, and 1¼ in. diam. ℔ ℔ .. 6c
Wagon Rivets, ex. large, oval and steeple head, ¼ in. diam., all lengths, ℔ ℔ 11½c
Wagon Rivet, 3-16 inch diam., all lengths 13½c
Wagon Rivets & nails in 5 ℔ paper boxes, ℔ ℔ ex 1c
Wagon and Hinge Nails, ℔ ℔ net 17½c
Coupling Plates ..... 10c ℔ ℔ net
Double Tree Plates ..... 10c ℔ ℔ net
Tongue Plates ..... 10c ℔ ℔ net
Neck Yoke Plates ..... ℔ ℔ 13c
Tongue Cap Iron, 1¼, 2 and 2½ in. wide, same price ℔ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue 5-16 in., 13½c; ¼ in., 14½c.

Nails, Brads, Spikes, etc,

CUT NAIL LIST.

10d to 60d nails, fence, and brads $5 50
8d and 9d nails, fence and brads 5 75
6d and 7d nails, fence and brads 6 00
4d and 5d nails, fence and brads 6 25
3d nails, fence and brads 7 00
2d nails, fence and brads 8 25

TOBACCO.

FINE BLUED.		BARREL.	
3d	$8 25	1¼ inch	$6 25
2d	9 25	1⅜ inch	6 50
LINING.		1½ inch	7 00
7-8	10 00	1¾ inch	7 25
CASING.		1 inch	8 00
10d to 50d	6 25	¾ inch	8 50
8d	6 50	FINISHING.	
6d	6 75	10d to 50d	6 75
4d	7 00	8d	7 00
		6d	7 25
		4d	7 50

Cut spikes, all sizes 5 75
Cut boat spikes 6 25
Clinch nails, all sizes 6 25

TERMS.—Sixty day's time, or two per cent. discount if remitted within ten days from date of invoice. Prices subject to changes in market without further notice.

LENGTH OF NAILS.

2d, 1 inch; 3d, 1¼ inch; 4d, 1½ inch; 5d, 1¾ inch; 6d, 2 inch; 7d, 2¼ inch; 8d, 2½ inch; 9d, 2¾ inch; 10d, 3 inch; 12d, 3¼ inch; 16d, 3½ inch; 20d, 4 inch; 30d, 4½ inch; 40d, 5 inch; 50d, 5½ inch; 60d, 6 inch.

BOSTON.

Corrected by Fuller, Dana & Fitz, 110 North St., Boston, Importers and Commission Merchants.

Tin Plates.

I. C. Charcoal ..... per box @ 14 00
" Coke ..... " @ 13 00
" Terne ..... " @ 12 50

Metals.

Pig Tin, Bancs, gold ..... per lb. 36c
" Straits, " ..... " 31½c
" English, " ..... " 31½c
Copper, Sheathing ..... " 43c
" " yellow ..... " 33c
Copper Bolt ..... " 45c
" Braziers ..... " 45c
" Ingot ..... " 37c
" Old ..... "
Lead, Spanish Pig, gold 6¾c
" Sheet and Pipe ..... 9·90c
" Old 6¾c
Spelter, Silesian, gold 7¾c
" American, " 6¾c
Zinc, Sheet 10¼c

Iron.

Sheet Iron, Russia, gold ..... per lb. 18c
" English ..... " 7c @ 7¾c
" American ..... " 8c
" Galvanized ..... " 11c @ 13c
Swedes Bar Iron, Flat, gold, per ton, $135 00 @ $145 00
" Shoe Shapes, " " 150 00 @
Norway Bar Iron, Flats, " " 135 00 @ 145 00
Norway Shapes, gold, per ton, 150 00 @
Norway R'd, 2 in. to ¾ in. gld. pr. ton 140 00 @
" " 11-16 to ⅜ in. " " 157 50 @
" " 5-16 to ¼ in. " " 160 00 @
" Nail Rods, Roll'd " " 172 50 @
" " U. B. " " 167 50 @
" " Benzon " " 162 50 @
" " Vasa, " " 157 50 @
" " Wlw, " " 152 50 @
English Refined Bar Iron, " 100 00 @
Scotch Pig Iron, " 52 00 @ 55 00
American " " 50 00 @ 55 00
Wrought Scrap Iron, " 43 00 @ 45 00

Steel.

English Tool Steel, gold ..... per lb. 16c.
" Machinery Steel, gold ..... " 10c.
American Tool " ..... " 16c.
" Machinery " ..... " 11c.
Bessemer Steel ..... 8¼ @ 9¼c
German " ..... per lb. 10½c.
Spring Steel ..... " 9c.
Tire " ..... " 8c.
Sleigh Shoe Steel ..... " 7c.
Toe Calk " ..... " 8¼c.

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

Jan. 2d, 1873.

Axes, Chopping—Blood's ..... $12 50 @ 14 50
Augers—C. S. cut ..... dis 25%
Bits, Auger—Pierce's 25%
Jennings' ..... dis 10%
Bells, Cow—Yaw's Genuine ..... net
Bells, Hand ..... dis 50 @ 50&10%
Bellows—Smiths' ..... dis 15 @ 20%
Moulders' ..... dis 15%
Bolts—Carriage and Tire, dia. neck ..... dis 60 & 10%
Braces, Bit—Barber's ..... dis 20 & 10%
Spofford's Patent ..... dis 37½%
Brads, Cut ..... dis 50 @ 50&7½%
Boards—Stove, Brooks' Patent, new list ..... dis 30%
Buckets—Well ..... per doz $6 00
Butts—Brass ..... dis 25%
Cast Loose Joint ..... dis 40%
" " Pin ..... dis 30%
" " " Japanned ..... dis 30%
" " " Silver Tipped ..... dis 20%
Wrought Narrow ..... net
" Broad, Loose Joint ..... dis 15%
" Table and Back Flaps ..... net
Belting—Rubber ..... dis 30 @ 33⅓%
Leather, new list ..... dis 50 @ 30 & 5%
Beaters, Egg "Peerless" ..... per doz $4 00
Brick—Bath (box of 2 doz) Best English $1 50
"Rutherford" $1 25
Bung Borers—"Enterprise" ..... dis 20%
Chalk—White, Carpenter's ..... per gross, 50c
Blue, Carpenter's ..... " $1 00
Crayon School ..... " 14c
Chisels—Firmer Socket ..... dis 40 @ 60 & 5%
Framing Socket ..... dis 60 @ 60 & 5%
Corner Socket ..... dis 60 @ 60 & 5%
Slick's Carpenters' ..... dis 60 @ 60 & 5%
Castings—Malleable ..... ℔ ℔, 11c
Cutters, Meat—Hale's Patent ..... dis 10%
Cherry Seeders ..... per doz $9 00
Elbows—Corrugated 5 5½ 6 7 ..... dis 10%
Charcoal ..... $4 25 15·25 5·25 6·50
Russia ..... 10·00 13·00 13·00 14·00
Faucets—Wood, Cork Lined ..... dis 50 @ 50&10%
Files—Wheeler, Madden & Clemson's ..... dis 42½%
Freezers, Ice Cream—"Champion" ..... dis 33⅓%
Gates—Molasses— [redacted]
Patent Self-Measuring ..... ℔ doz. $42 00; dis 20%
Hinges—Window Blind—"Shepard's" ..... dis 30%
"Standard" ..... dis 30%
Wrought Strap and T 7½%
Hods, Coal—Plain, Black and Galvanized ..... new list net
Funnel, Black and Galvanized ..... new list net
Fancy and Helmet ..... new list net
Hammers—Maydole's ..... net
Yerkes & Plumb's ..... dis 5%
Hatchets—Blood's ..... net @ 5%
Hooks and Staples—Wrought ..... 50&10 @ 60%
Hooks—Belt ..... dis 45&10%
Hasps and Staples—Wrought ..... dis 50&10%
Sad Irons ..... ℔ ℔ 5½c
Kettles—Brass ..... ℔ ℔, 59½c
Enameled ..... dis 30%
Knives, Drawing—Oval No. 1 ..... dis 60 @ 60 & 5
Razor Blade ..... dis 50%
Corn, Greenwood's ..... dis 25&5%
Lanterns "Peerless". No. 1 5 10
℔ doz $26 00 $12 50 $15 00 dis 10%
"Radiant" 75 100 150 175
℔ doz $13·13 13·13 24·50 22·50 dis 20%
Knobs—Door, R. & E. Mfg Co ..... dis 20 @ 25%
Locks—Door, R. & E. Mfg. Co ..... dis 20 @ 25%
Machines—Apple Paring, Turn Table ..... $8 50 ℔ doz
" " Lightning ..... $8 50 ℔ doz
Tinmen's ..... "
Dowelling, Merchant's, No. 1 ..... " 4 75
" " No. 2 ..... " 5 00
Mills, Coffee—Box and Slide, common ..... dis 10%
Box Union and Eagle ..... dis 5%
Swift's Patent ..... dis 10%
"Champion" ..... dis 20%
Nails—Cut, Chesapeake ..... $5 25 rates
Clout and Finishing ..... list @ dis 7½%
Shoe ..... list @ dis 7½%
Horse, Ausable ..... No. 5 6 7 8 9 10
30 27 25 24 23 22c
" " 1000 lbs ..... dis 5%
" Clinton ..... No. 6 7 8 9 10
23 21 20 19 18c
Packing—Rubber ..... dis 30 @ 33⅓%
Pencils, Slate—Soapstone ..... 4 5 6 in.
30 40 50c. per 100
Case lots ..... dis 20%
Paint—White Lead, U. S. Gov't ..... ℔ 9½c
Rivets—Iron, Black and Tinned ..... dis 20 @ 25%
Copper ..... 5 @ 10%
Rope—Manila, ½ inch and larger ..... ℔ ℔ 18c
Rules—Boxwood and Ivory ..... dis 30&10%
Staples—Blind, Boardman's Pat., ½ & ⅝ ..... ℔ ℔ 37c
Skates—White's ..... dis 20%
Straps, Skate—Russet and Black ..... net @ 20%
Spoons—Iron Tinned ..... dis 10%
" " by the case ..... dis 20%
Plated Rogers' A No. 1 ..... dis 25&5%
Squares—Steel and Iron ..... list net
Shoes, Horse—H. Burden & Sons ..... ℔ keg $7 00
Shovels & Spades—Shepard, Forsyth & Dennison ..... dis 5%
Saws—Henry Disston & Sons ..... dis 5%
Scales—Buffalo Scale Works ..... dis 25%
Fairbanks ..... dis 15%
Screws—National Screw Co. Iron. ..... dis 50%
Brass. ..... dis 40%
Shears—Seymour's ..... dis 50%
Scythes—Greenwood's ..... dis 25&5%
Tools—Tinmen's ..... "
Traps, Steel—Newhouse ..... dis 17½%
Tacks—Half Weight Am. Iron ..... dis 70 @ 70&7½%
Vises—Parallel, Buffalo ..... dis 15%
Wrenches—Coes' genuine ..... dis 25%
Coes' Imitation ..... dis 45 & 10%
Tafts' Pattern ..... dis 62½ & 10%
Ware—French, Tinned and Iron ..... dis 30%
Stamped and Japanned ..... net
Cast Iron Hollow ..... dis 30@30%

METALS.

Tin Plates, Charcoal IC.

10x14	$13 00
12x12	13 50
12½x17	12 50
14x20	14 00
14x20 terne	12 00
20x28 "	27 00
Add for each X	3 50
Pig Tin—Straits	39 @ 40c
Banca	46 @ 47c

Solder ..... No. 1 34c, No. 2 32c, (50 lbs. deduct ½c (100 " " 1c
Sheet Zinc, "Lasalle," 1000 500 100 ℔ casks
$10 75 $10 85 $11 05 ℔ 100 ℔s
Iron Wire—Bright and annealed ..... dis 10 @ 20%
Coppered ..... dis 5 @ 15%
Tinned ..... dis 5 @ 15%
Tinned Broom Nos. 20 to 22 ..... ℔ ℔ 16½
Copper—Sheathing 14@18 oz ..... ℔ ℔ 48c
Planished ..... ℔ ℔ 49 @ 51c
Bottoms ..... ℔ ℔ 45c
Bolts ..... ℔ ℔ 45c
Braziers' Sheets ..... ℔ ℔ 45c
Sheet Iron—W. D. Wood & Co.'s Smooth Char. Iron

Nos. 10 to 14	7·05	8·55	10·05c
Nos. 15 to 20	7·25	8·75	10·25c
Nos. 21 to 24	7·45	8·95	10·45c
Nos. 25 & 26	7·65	9·15	10·65c
No. 27	7·85	9·35	10·85c

Am. Russia ..... A. 15c, B. 19c
Gen. Russia, No. 1 stained 19c
" " " clean 20c
Galvanized ..... dis 20%

CHICAGO.

Reported by Markley, Alling & Co., Dec. 1872.

AUGERS AND BITS.

Ives', extra C. S ..... dis 20%
Jenning's ..... net list
Cooks' ..... dis 25%
Snell's ..... dis 7½%
Snell's Car Bits ..... net list

AXES.

Amoskeag Yankee ..... ℔ doz $13 50
" Crescent ..... " 14 00
Hunt's Yankee ..... " 14 50
Kennebeck Yankee ..... " 12 00
Lippincott " ..... " 12 50
" Crown ..... " 13 00
" Beveled ..... " 13 00
Jefford's Silver Steel ..... " 13 00
Red Warrior, Beveled ..... " 14 00
Kennebeck, Handled ..... " 15 00
Boy's, Handled ..... " 12 00

BOLTS.

Carriage and Tire ..... dis 50&20%
Cast Barrel and Shutter ..... dis 20&10%
Wrought Iron Barrel ..... add 10%
" " Square ..... net list

BUTTS.

Cast Fast Joint, Narrow ..... dis 10%
" " Broad ..... dis 20%
" Loose Joint ..... dis 35%
" " Pin, Reversible ..... dis 25%
" " Japanned ..... dis 25%
" " Silver Tipped ..... dis 25%
Wrought Narrow, Fast Joint ..... net list
" Broad, Fast Joint ..... dis 15%
" " Loose Joint ..... dis 15%
" Loose Pin ..... dis 15%
" Table ..... net list
" Brass ..... dis 15%
Garretson's Blind Butts, Wood ..... doz sets $2 00
" " " Brick ..... doz sets 3 00
Parker's " " Wood ..... doz sets 2 45
" " " Brick ..... doz sets 3 50

CASTERS.

Iron Plate ..... dis 20%
Brass Wheel Plate ..... dis 20%
Porcelain Wheel Plate ..... dis 20%
" " Bed ..... dis 20%
Iron Wheel Bed ..... dis 20%

CHISELS.

Butcher's Tanged Firmer ..... dis 30%
" Long Paring ..... dis 30%
Witherby Socket Framing ..... dis 50&15%
" " Firmer ..... dis 50&15%
" " Corner ..... dis 50&15%
" " Slicks ..... dis 50&15%

COFFEE MILLS.

Box 4 Iron ..... $ 3 75
" 103 " 5 25
" 102 " 7 50
" 107 Britannia 7 50
" 106 " 9 25
" 25 Union 11 00
" 35 " 13 00
" 75 Cast Steel 11 00
" 85 " 13 00
Side 50 ..... 4 75
" 60 ..... 5 75
" 70 ..... 7 25
" 90 ..... 18 00
" 15 Union 7 00
" 30 " 8 00

CUTLERY.

American Table ..... dis 30%
" Pocket ..... dis 25%

DOOR SPRINGS.

Torry ..... ℔ doz $7 50
Rubber ..... " 4 00
Boon's ..... " 5 00

DRAWING KNIVES.

Witherby Tool Co ..... dis 50&15%
Ohio Tool Co. ..... net list

FILES.

Butcher's ..... $7 00 £
Nicholson's ..... $5 00 @ $5 50 £

HAMMERS.

Maydole's ..... net list
Yerks & Plumb ..... net list
Cheney ..... net list

HANDLES.

Extra Axe ..... ℔ doz $3 00
No. 1 Axe ..... " 2 25
No. 2 Axe ..... " 2 00
R. R. Pick, No. 1 ..... " 2 00
Coal " ..... " 2 00
Sledge, No. 1 ..... " 2 00
Hatchet ..... " 65
Hammer, A. E ..... " 65

HATCHES.

Amoskeag Shingling, No. 1 ..... ℔ doz $7 25
" No. 2 ..... " 6 00
" No. 3 ..... " 8 75
" Claw, No. 1 ..... " 7 75
" " No. 2 ..... " 8 50
" " No. 3 ..... " 9 25
" Lath, No. 1 ..... " 7 50
" " No. 2 ..... " 8 25
" " Solid Steel ..... " 12 00

HINGES.

Strap and T ..... dis 5%
Screw Hook and Strap, 8 to 12 in ..... net, 10c ℔ ℔
" " 14 to 24 in ..... net, 9c ℔ ℔
Hook and Eye Hinges ..... net 12c @ 16c ℔ ℔
Gate, No. 85, State ..... ℔ doz $3 50
" No. 3, In and Out ..... " 3 50
" Blinn's Pat ..... " 7 50

HORSE NAILS.

Northwestern, 8d 24c
Ausable, 8d 24c

KETTLES.

Brass ..... net 55c
Enameled ..... dis 15%

LOCKS AND KNOBS.

Norwalk Lock Co ..... dis 20%
Branford " ..... dis 20%
Eagle " ..... dis 15%
American Pad Locks ..... dis 20%
Continental Lock Co ..... dis 10%

MEAT CUTTERS.

Haven's Patent ..... net list
Hale's " ..... dis 10%
Woodruff " ..... net list
Stowe's Sausage Stuffers ..... net list

MOLASSES GATES.

Stebbin's Patent ..... dis 40%
Enterprise " ..... dis 5%

OIL STONES.

Washita No. 1 ..... net 35c ℔ ℔
" Slips ..... net 65c "
Hindostan No. 1 ..... net 9c "
" Axe ..... net 10c "
" Slips ..... net 15c "

PICKS AND MATTOCKS.

Picks, Railroad, Axe Finish ..... ℔ doz, $13 00
" Coal, Axe Finish ..... " 10 00
Mattocks, L. C., Axe Finish ..... " 16 00
" S. C. " ..... " 15 50
Grub Hoes, Axe Finish, No. 2 ..... " 12 00

PLANES.

Ohio Tool Co. Bench ..... net list
Sciota ..... dis 10%
A. Howland & Co. Bench ..... net list
" " Fancy ..... net list
Bailey Patent Iron ..... dis 15%
Plane Irons, Butcher's ..... dis 30%

RIVETS.

Iron ..... dis 10 @ 15%
Tinned ..... dis 10 @ 15%
Copper, No. 7 ..... net, ℔ ℔, 60c

RULES.

Stanley Rule and Level Co ..... dis 30%
Hubbard & Curtiss Mfg. Co

Steel.

THREE 1st CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry, LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1ª UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

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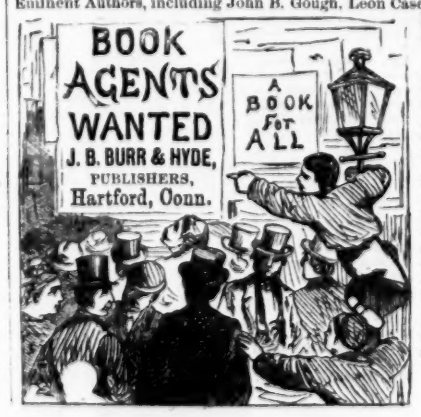

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43 Chambers St., New York.

A full assortment of "Jenks' Spring Steel," in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.,

Manufacturers of all descriptions of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

PITTSBURGH, PA.

Gunpowder.

GUNPOWDER.

DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS,

ESTABLISHED IN 1801,

Have maintained their great reputation for 70 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER

of all kinds and descriptions.

For sale in all parts of the country. Represented by

F. L. KNEELAND,

70 Wall Street, NEW YORK.

GUN-POWDER

LAFLIN & RAND POWDER CO.,

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES, from having agencies and magazines at al prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale, and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands of Rifle Powder:

Orange Rifle, Orange Ducking, Lightning, Audubon.

SAFETY-FUSE at wholesale

Steel.

HUSSEY, WELLS & CO.

MANUFACTURERS OF ALL DESCRIPTIONS OF

CAST STEEL,

INCLUDING

Best Refined Steel for Edge Tools.

PARTICULAR ATTENTION PAID TO THE MANUFACTURE OF STEEL FOR

Railroad Supplies, Homogeneous Plates

FOR LOCOMOTIVES, BOILERS AND FIRE BOXES,

Smoke-Stack Steel, Cast Steel Forgings for Crank Pins, Car Axles, &c.

ALSO, MANUFACTURERS OF THE CELEBRATED BRAND

"Hussey, Wells & Co. Cast Spring Steel,"

For Elliptic Springs for Railroad Cars & Locomotives.

PENN AND SEVENTEENTH STS., PITTSBURGH, PA.

BRANCH OFFICES:

30 Gold St., New York. 139 & 141 Federal St., Boston. 88 Michigan Ave., Chicago.

Pittsburgh Steel Works

ESTABLISHED IN 1845.

ANDERSON & WOODS,

MANUFACTURERS OF

BEST REFINED CAST STEEL,

Cast and German Plow and Spring Steel,

FIRST AVE., AND ROSS ST., PITTSBURGH.

BRANCH HOUSES:

Nos. 74 and 75 North Street, Boston. C. H. WHITNEY & SON, 142 Greenwich Street, New York.
W. F. POTTS, SON & CO., 1225 Market Street, Philadelphia.

First Prize awarded at Fair of American Institute, 1870.

CHROME STEEL COMPANY,

MANUFACTURERS OF BEST

CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Works and Offices—Kent Avenue and Keap Street, Brooklyn, E. D.

W. W. W. WOOD, President. C. P. HAUGHIAN, Superintendent.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.

J. A. GRISWOLD. E. CORNING. E. CORNING, Jr. C. GRISWOLD.

PROPRIETORS OF THE

Rensselaer Iron Works, Bessemer Steel Works, Fort Edward Blast Furnace, And Columbia Blast Furnace.

MANUFACTURERS OF

Pig Iron, Railroad Iron, Merchant and Ship Iron,

BESSEMER STEEL RAILS, AXLES, TIRES, SHAFTING,

PLATES AND STEEL FORGINGS OF ALL DESCRIPTIONS.

New Jersey Steel and Iron Company.

Trenton, N. J.,

Represented by COOPER, HEWITT & CO., 17 Burling Slip, New York,

MAKERS OF

ROLLED IRON BEAMS.

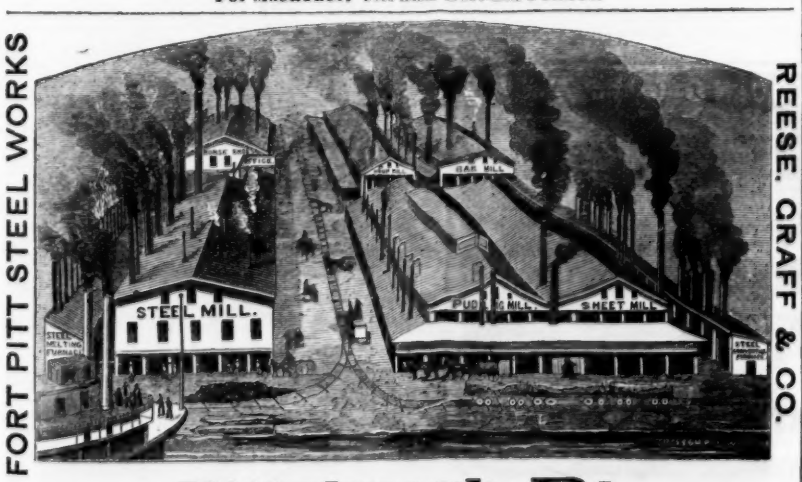
Channel Bars, the Trenton Steel Top Rails, &c., &c. Refined Iron, Brazier and Wire Rods.

ALSO,

THE MARTIN STEEL,

For Machinery Uses and Fire-Box Plates.

FORT PITT STEEL WORKS



REESE, CRAFF & CO.

Pittsburgh, Pa.

DESIGNING AND ENGRAVING ON WOOD

52 JOHN ST. H. R. WHITE NEW YORK.

Chicago Metal Market.

(Reported by Cragin Bros. & Co., 141, 143 & 145 Lake street.)

CHICAGO, Dec. 2, 1872.

TIN PLATE.

IC, 10x14, Coke	$13 00
IC, 10x14, Charcoal	14 00
IX, 10x14 "	17 00
IC, 12x12, Coke	
IC, 12x12, Charcoal	14 50
IX, 12x12, "	17 50
IC, 14x20, Coke	
IC, 14x20, Charcoal	15 00
IX, 14x20, "	18 00
IXX, 14x20, "	21 00
IXXX, 14x20, "	24 00
IXXXX, 14x20 "	27 00
IX, 14x14, "	28 50
DC, 100 Plate, "	14 00
DX "	17 00
DXX, "	20 00
DXXX, "	23 00
IC, 14x20, Coke Roofing	
IC, 14x20, Charcoal Roofing	13 50
IX, 14x20, "	16 00
IC, 20x28, "	29 00
IX, 20x28, "	34 00

PIG TIN.

Large, 60 lb	40c
Small, 30 lb	41c
Bar Tin	42c

ZINC.

In casks 1000 lbs	11¼c
" 500 "	11¾c
In sheets	12c
Slab	9c

COPPER.

Copper Bottoms	48c
Sheathing Copper	43c
Planished Copper 14x48	51c
Size, 14x52, 14x56, 14x60 } Nos. 7 8 9 } Planished Copper	53c

BRAZIERS' SHEETS, 30x60.

6 to 8 lbs	53c
10 and 12 lbs	50c
15 to 100 lbs	47c
Ingot Copper	
Bolt Copper	52c

SOLDER.

Fine, C. B. & Co.'s Brand	25c
Ordinary	23c
Plumbers' Solder, No. 1	23c
" " 2	21c
ANTIMONY	20c
BABBITT METAL	15c to 25c
GALVANIZED IRON Conductor Pipe, per lb	12c

SHEET IRON.

	Common.	Smooth.	Charcoal.
No. 14 to 24	7¼c	8c	9½c
25 & 26	7½c	8¼c	9¾c
27	7¾c	8½c	10c

Add ¼c per lb for 30 in. wide.

GALVANIZED IRON.

No. 16 to 20	15c
" 21 to 24	16c
" 25 & 26	17c
" 27	18c
" 28	20c

Discount, 15 per cent.

RUSSIA IRON.

Perfect, all numbers	20c

In sheets, 1c. higher.

AMERICAN RUSSIA.

A	16c
B	14c

In sheets, 1c. higher.

BRAZIERS' RODS.

¼ inch, 10 ft. long, per lb	8c
3-16 " " "	10c

LEAD.

Pig	9c
Bar	10c
Lead Pipe, in full coils	11c
" " when cut	11½c
Sheet Lead	11c

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers of Metals, No. 214, 216 and 218 Main street.

TIN PLATE.

I. C. 10x14 Charcoal	$14·00 @ 15·00
I. C. 10x14 best Coke	13·00 @ 14·00
I. C. Terne, 14-20	12·50 @ 14·00
I. C. " 20-28	28·00 @ 28·50
I. C. Continuous	27·00

METALS.

Pig Tin, Banca, none in stock; Straits, 40 @ 41c; English, 40c; Solder, S. & Co., ℔ lb., 24c; A1, 25c; Roofing, 27c.; Lead, Pig, ℔ lb., 7½ @ 8c; Bar, 8½c. @ 9c.

Copper, Ingot, ℔ lb, Planished, 54c; Sheathing, 46c; Bolt, 45c; Brazier, 6 to 9 lb, 51c; 10 to 14 lb, 48c; 14 to 100 lb, 45c; Copper Bottoms, 48c.

Zinc, Cask, 500 to 1000 lbs, ℔ lb, 11 @ 11¼c; Case, 100 lbs, 12c; Slab, 7½c @ 8½c.

Brass, Roll, No. 6 to 30, ℔ lb, 45c; 30 to 38, 50c; 38 to 40, 65c; Wire, No. 0 to 20, 50c; 20 to 25, 60c.

Babbit Metal, Sellew & Co., ℔ lb, 35c; Black Lead, 25c; Market, 15c.

Antimony, ℔ lb, 20c.

Bismuth, ℔ lb, $8·00.

Nickel, ℔ lb, $3·50.

MANUFACTURED IRON.

Bar, per 100 lbs	$5 25 @ 5 75
Sheet, Fo. 24, boiled	7 00 @ 7 50

SHEET IRON.

Russia	℔ lb, 22 @ 23c
Am. Russia A	" 15 @ 16
" " B	" 13 @ 14c

	Com. B.	Smooth Fin. S. L. U.	Smooth D. Re'fd.
18 to 20	6·3c	7·9c	9·3c
22 to 24	6·5c	8·1c	9·5c
26	6·8c	8·6c	9·7c
27	7c	8·8c	9·9c

GALVANIZED IRON.

Nos. 18 to 20	15c
" 22 to 24	16c
" 25 to 26	17c
No. 27	18c
" 28	20c

Galvanized, 15 % discount in full bundles.
Bar Steel, Silver, ℔ lb 22c; Crescent, 17½c.
Iron Wire, discount, 5 @ 10 %.
Enameled Ware, discount, 15 @ 25 %.

ONE PIECE CORRUGATED ELBOWS.

Charcoal Iron.		Russia Iron.	
4½ inch	℔ doz $3.75	4½ Inch	℔ doz $8.00
5 "	" 4·25	5 "	" 10·00
5½ "	" 5·25	5½ "	" 12·00
6 "	" 5·25	6 "	" 13·00
7 "	" 6·50	7 "	" 14·00

Sheet Iron Bread Pans ℔ lb 12½c.
American Broilers, ℔ doz, $12 @ $15.
Tinmen's Machines, add 5 %.
Sad Irons, ℔ lb., 5½c. @ 6c.
Brass Kettles, Ansonia, 53 @ 54c; L. & G., 50c.

Inside Diameter. Inches.	Wrought Iron Pipe. Per Foot.	Weights of Pipe. Per Foot.
⅛	$ 12	24
¼	12	42
⅜	14	56
½	15	85
¾	25	1·12
1	34	1·67
1¼	48	2·25
1½	60	2·69
2	85	3·66
2½	1·25	5·71
3	1·75	7·54
3½	2·10	9·05
4	2·75	10·72

45 % discount.

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

ANVILS.

Armitage	℔ lb, gold, 13c
Peter Wright's	" " 13½c
Wilkinson's	" " 12½c

APPLE PARERS.

Conqueror	℔ doz $8 50
Lightning	" 8 50
Turn Table	" 8 50

AUGERS AND BITTS.

Cook's	25 % off list
Ives'	20 % "
Jennings'	5 % "
Snell's	10 % "

AXES.

Hunt's	℔ doz $14 00 @ 15 00
Lippincott's	" 13 50 @ 14 50
Lippincott's Pioneer	" 14 00 @ 15 00
Simmons'	" 13 50 @ 14 50

AXLES.

Kritch & Crane Mfg. Co.'s—	
Patent Taper Axles	5 % off list
Swelled Taper Axles	5 % "
Concord Axles	5 % "
Red Jacket Axles	5 % "
Common Axles, 1⅝ inch and upward	℔ lb 9c.
" " less than 1⅝ inch	" 9½c

BELLS.

Troy, Church	℔ lb 55c
Light Brass, Hand	50 % off list
Moore's, Cow	20 % "

BOLTS.

Arms, Bell & Co.'s Machine	10 % off list
" " " Carriage and Tire	60 % "
Norway Iron Carriage and Tire	45 % "
Cast Iron Barrel, Shutter, &c	30 % "

CAST BUTT HINGES.

Narrow Fast Joint	15 % off list
Broad Fast Joint	30 % "
Broad Loose Joint	40 % "
Reversible	30 % "
Revers, Japanned and Silver Tipped	30 % "
Loose Joint " "	20 % "
Excelsior Reversible Blind	25&5 % "
Lull & Porter's Blind	25&5 % "

WROUGHT BUTTS.

Narrow	net list
Reversible	15 % off list
Broad	15 % "
Table Hinges	net list
Back Flaps	net list
Inside Blind Hinges	net list

CASTORS.

Porcelain Wheel Bed or Plate	30 % off list
Iron or Brass "	20 % "

CHAINS.

English Coil	3-16	¼	5-16	⅜	7-16	½ in.
	15	12½	11¼	11	10⅝	10c. gold
Trace				6½-10-2		70c. "
				7-10-2		75c. "
German Coil and Halter						new list add 25 % "

CHISELS.

Socket, Firmer or Framing	55 % off list

CLOTHES WRINGERS.

Colby's	℔ doz $66 00
Novelty	" 72 00
Universal	" 72 00
Monitor	" 72 00

COFFEE MILLS.

Parker's	net list
P. S. W. & Co.'s	5 % "

CORN KNIVES.

Dunn Edge Tool Co.'s Clipper	℔ doz $5 75
Disston's	" 5 75

CROW BARS.

Steel Pointed	℔ lb 8 @ 10c
Solid Cast Steel	" 20c

CUTLERY.

J. Russell & Co.'s	
Lamson, Goodnow & Co.'s	15 % off new list
Landers, Frary & Clark's	

FILES AND RASPS.

Nicholson's Mill Files	$5 50 to the £ currency
Nicholson's Other Files	5 00 to the £ currency
Butcher's Files	7 00 to the £ currency
Heller's Horse Rasps	$10 00 to the £ cur'y less 40 %

FORKS AND HOES.

Auburn Mfg. Co.'s Hay & Manure Forks	25 % off list
" " " Handled Hoes	20 % "
" " " Planter Eye Hoes	add 15 % to list
Winsted's Planter Eye Hoes	add 15 % "

HAMMERS.

Yerkes & Plumb	new list net
Masons' Hammers	℔ lb 20c
Smith Hand Hammers	" 22c

HANDLES.

	Extra.	No. 1.	No. 2.	No. 3.
Axe	$2·75	$2·25	$1·75	$1·00
Pick	Extra. $2·50	No. 1. $2·00	No. 1½. $1·75	No. 2. $1·25

Smith & Montross Fork, Hoe and Rake	10 % off list
" " Broom and Mop	$12 @ $18 ℔ M.

HARROW TEETH.

1 inch iron	℔ lb 6c
⅞ and ¾ inch, iron	" 6½c
⅝ inch iron	" 6½c
Barbed or Headed	½c extra

HATCHETS.

Hunt's	add 5 % to list
Simmons'	5 % off list

HAY KNIVES.

Lightning	℔ doz, $24 00
Dunn Edge Tool Co.'s	℔ doz $14 50—less 10 %
Fisher's	" 16 50—less 10 %

HINGES.

Strap and T—St. Louis make	net list

HORSE NAILS.

Eureka	25c rates
Ausable	22c "
Northwestern	22c "
Eagle	19c "

HORSE SHOES.

Rhode Island (Perkin's pattern)	℔ keg $7 50
Burden's	" 7 50
Mule Shoes	$1 00 extra
Rhode Island Trotting Shoes	2 50 "

LOCKS AND LATCHES.

Jones & Nimick's	20 % off list.
Moorehead, Adams & Co	20 % "
Norwalk Lock Co.'s revised list	20 % "

MATTOCKS AND GRUB HOES.

Klein, Logan & Co.'s Mat'cks	℔ doz. $14 25 @ 15 75
" Grub Hoes, Oval Eye	℔ doz. $11 00 @ 12 50

NAILS.

Wheeling	$5 60 rates.

PICKS.

Klein, Logan & Co.'s R. R. and Clay	$12 00 ℔ doz.
" " " Coal	9 75 "
" " " Poll	12 00 "
" " " Stone	16 50 "
" " " Tamping	19 00 "

PLANES.

Ohio Tool Co.'s	add 15 % to list
Eastern	add 10 % "

SAD IRONS.

Monitor Brand, Silver Polished	℔ lb 6c

SASH WEIGHTS.

Standard Solid Eyes	℔ lb 3½c

SAWS.

Disston's	5 % off list
Spear & Jackson's	$5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s	10 % off list
Branch, Crooks & Co.'s	10 % "
Livingston's Patent Buck	net list

SCREWS.

American Screw Co.'s revised list	45 % off
$2000 worth in 6 months	2½ % extra

SCYTHES.

Blood's C. S. & G. S.	net list
Dunn's Edge Tool Co.'s	"
Paris Furnace Co's	20 % off list
Waldron's English	$9 00 to £

SCYTHE STONES.

No. 1 Indian Pond	℔ gross $ 7 00
Extra Indian Pond	" 7 50
Premium	" 9 50
Diamond Grit	" 13 50

.25 % off

SHOVELS, SPADES AND SCOOPS.

Ames'	add $1 00 to list
Lippincott's	new list net
Rowland's	net list

SLEDGES.

Smith Stone or Coal Sledges—	
Steel Face Polished	℔ lb 17c
Solid Cast Steel	" 35c
Striking Sledges	℔ lb extra 1c

SNATHS AND CRADLES

	20 % off list

SPRINGS.

Cleveland Spring Co.'s—	
Carriage and Express	net list
Blue Seat Springs	20 % off list

TACKS.

Norway Tack Co.'s ½ weight	70 % off list
Brads	50 % "

TRAPS.

Newhouse Patent	12½ % off list
Reichard's Animal, Wood Bottom	℔ doz $10 00
" " Metal Bottom	" 12 00

VISES.

Solid Box	℔ lb 18c
Wilson Mfg. Co.'s	15 % off list

WRENCHES.

Coes' Genuine	25 % off list
Coes' Pattern	40 % "
Taft's	50 % "

London Metal Market.

From the Mining Journal.

COPPER.

Best selected	per ton	93	0	0	95	0 0
Tough Cake and Tile	"	90	0	0	93	0 0
Sheathing and Sheets	"	91	0	0	95	0 0
Bolts	"	100	0	0		
Bottoms	"	101	0	0		
Old (exchange)	"	75	0	0	78	0 0
Burra Burra	"	90	0	0		
Wire	per lb.				0	1 0½
Tubes	"	0	1	0	0	1 1

BRASS.

Sheets	per lb.	0	0	9¼	0	0 10¼
Wire	"	0	0	9¼		
Tubes	"	0	0	10¼	0	0 11
Yellow Metal Sheathing	"	0	0	7¼	0	0 8
Sheets	"	0	0	7¼	0	0 8

SPELTER.

Foreign	per ton.	23	10	0	24	0
To arrive						

ZINC.

In sheets	per ton.	31	10	0	32	0

TIN.

English Blocks	per ton.	141	10	0	142	0 0
Ditto Bars	"	142	0	0	143	0 0
Ditto, refined	"	143	0	0	144	0 0
Banca	"	144	0	0	145	0 0
Straits	"	136	0	0	137	0 0

TIN PLATES.*

IC Charcoal, 1st quality†	per box.	1	18	6	2	0 6
IX Ditto, 1st quality	"	2	4	6	2	6 6
IC Ditto, 2d quality	"	1	16	6	1	18 6
IX Ditto, 2d quality	"	2	2	6	2	4 6
IC Coke	"	1	13	0	1	15 0
IX Ditto	"	1	19	0	2	1 0
Canada plates, per ton	"	24	0	0		
Ditto, at works	"	21	0	0	22	0 0

IRON.

Bars, Welsh, in London:	per ton.	10	10	0	11	0 0
Ditto to arrive	"	10	10	0		
Nail rods	"				11	0 0
" Stafford in London	"	11	2	6	12	10 0
Bars "	"	11	15	0	12	0 0
Hoops "	"	13	0	0	14	0 0
Bars " at works	"	12	0	0		
Hoops " "	"	13	0	0		
Sheets, single	"	14	0	0	14	10 0
Pig, No. 1, in Wales	"	6	0	0	7	0 0
Refined metal, ditto	"	7	0	0	8	0 0
Bars, common, ditto	"	9	15	0	10	0 0
Ditto, merchant, Tyne or Tees	"				11	0 0
Do., Railway, in Wales	"	9	15	0	10	0 0
Ditto Swd., in London	"	15	15	0		
Ioarrive	"					
Pig, No. 1, in Clyde	"	5	5	0	6	5 0
Do., f.o.b. Tyne or Tees	"	4	10	0	5	10 0
Ditto, Nos. 3, 4, f.o.b. do.	"					
Railway chairs	"	5	5	0	6	0 0
" spikes	"	17	10	0	14	0 0
Indian Charcoal Pigs in London	"	7	0	0	8	0 0

STEEL.

Swedish, in kegs (rolled)	per ton.					
Ditto (hammered)	"	18	10	0	19	0 0
Ditto in faggots	"					
English, Spring	"	23	0	0	25	0 0
QUICKSILVER, per bottle		nom.			12	15 0

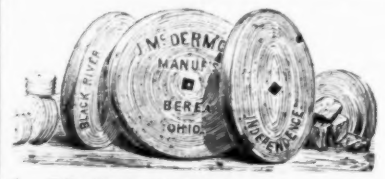
LEAD.

English Pig, common	per ton.	21	15	0	22	0 0
Ditto, Lib	"				21	15 0
Ditto (WB)	"	22	10	0	23	0 0
Ditto, sheet	"				21	15 0
Ditto, red lead	"	24	10	0		
Ditto white	"	28	10	0	30	0 0
Ditto, patent shot	"	24	10	0	24	15 0
Spanish	"	21	5	0	21	10 0

*At the works, 1s. to 1s. 6d. per box less. †Add 6d for each X.

Terne Plates 2s. per box below Tin Plates of similar brands.

Grindstones, Emery, &c.



J. McDERMOTT & CO.,

MINERS AND MANUFACTURERS OF

GRINDSTONES.

Black River, Independence and Berea Grits,

BUILDING STONES

of every description, from the above quarries.

OFFICE, NATIONAL BANK BUILDINGS.

Cor. Superior and Water Streets,

CLEVELAND, O.

WALTER R. WOOD & CO.,

Manufacturers of and Dealers in American and Foreign

283 and 285 Front Street, NEW YORK.

BEREA, OHIO.

GRINDSTONES

AND OHIO BUILDING STONE.

TRADE MARK.

THE UNION STONE CO.

Patentees and Manufacturers of

Emery Wheels,

Oil Stones, and Emery Blocks,

To order, in size and form to suit various mechanical uses. Grinders, Saw Gummers, Diamond Tools, and Wood's Patent Knife Grinder, for Planing, Paper Cutting, Tobacco, Leather-splitting and other Long Knives. Also, Mill Stone Cement.

16 Exchange St., BOSTON, MASS.

Branch Offices { 93 Liberty Street, NEW YORK. 502 Commerce St., PHILADELPHIA.

Send for Circular.

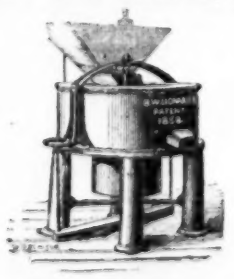
LEONARD & SILLIMAN

MANUFACTURERS OF

Portable Grist Mills,

Burr Mill Stones, &c.

BURR STONES,



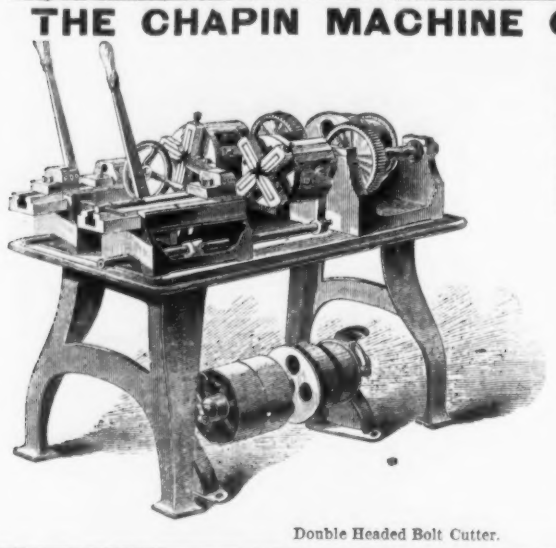
Strong Iron Frame.

BRIDGEPORT, CONN.

Machinery, &c.

THE CHAPIN MACHINE COMPANY,

NEW HARTFORD, CONN.



Double Headed Bolt Cutter.

Manufacturers of the latest improved

BOLT MACHINERY,

Double and Single Head Bolt Cutters,

Will cut from 5000 to 10,000 per day.

Chapin Header

Will head from ¾ iron down. Will head 10,000 Bolts per day.

Send for Circular.

BUSH HILL IRON WORKS,

Corner 16th & Buttonwood Streets,

PHILADELPHIA.

JAMES MOORE,

(Successor to MATTHEWS & MOORE,)

Engineer, Machinist, Founder and Boilermaker,

CASTINGS of every description.

ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE.

Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.

Sugar Mill, Saw Mill and Grist Mill Machinery,

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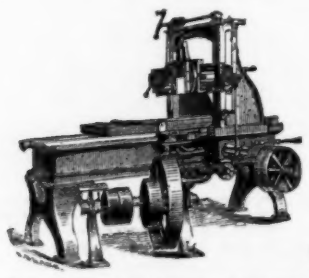

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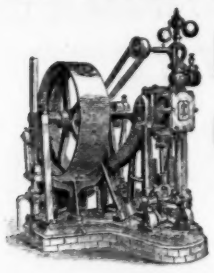

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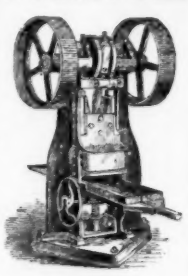

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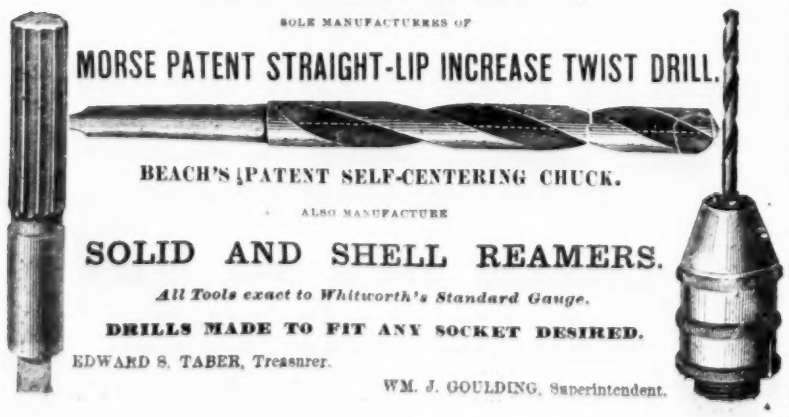

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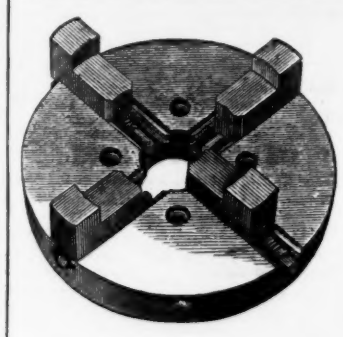

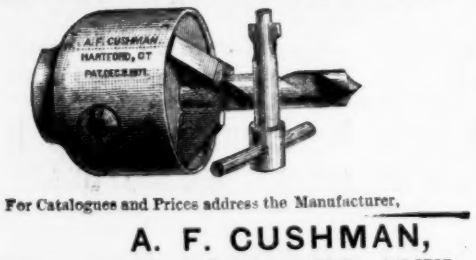

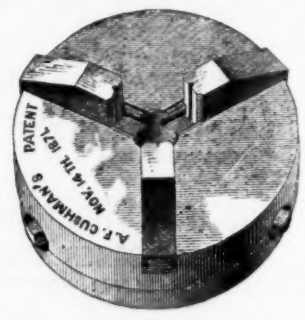

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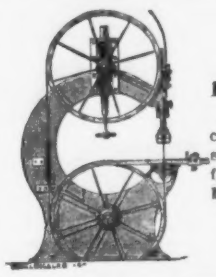

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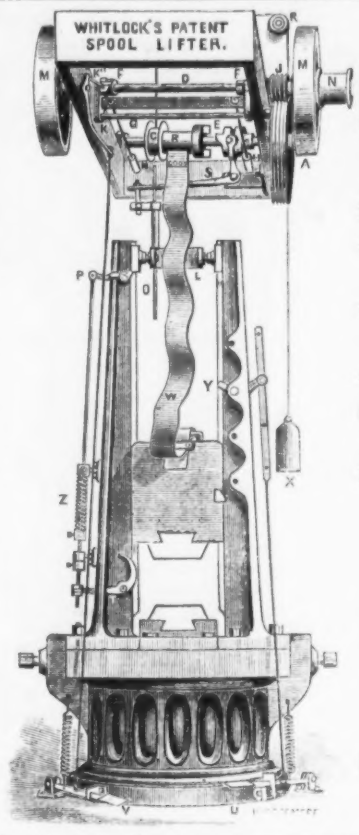

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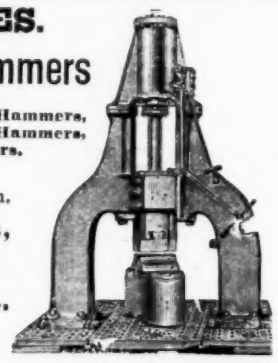

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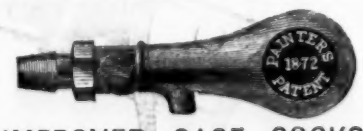

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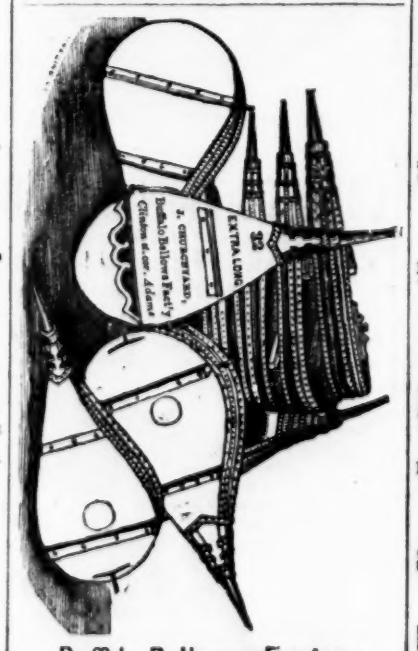

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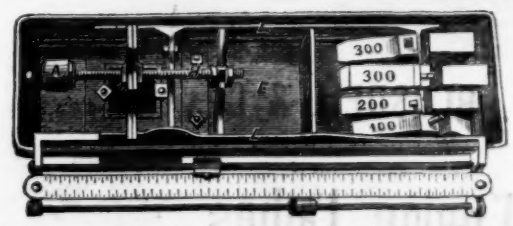

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